THE AMERICAN GAS LIGHT JOURNAL

REDMAN & KENNY, N.Y.

PUBLISHING OFFICE No. 42 PINE STREET

DEVOTED TO THE INTERESTS OF ILLUMINATION, HEATING, MECHANICAL, CHEMICAL AND GENERAL SCIENCE.

VOLUME LXXXI. No. 20. Whole No. 1,536. | NEW YORK, MONDAY, NOVEMBER 14, 1904. | $3 PER ANNUM, IN ADVANCE.

A. M. CALLENDER & CO., Proprietors. C. E. SANDERSON, Manager. THOMAS J. CUNNINGHAM and ELBERT P. CALLENDER, Editors.

ENTERED AT THE POST OFFICE AT NEW YORK, N. Y., AS SECOND-CLASS MATTER.

Published on each Monday of the year, at No. 42 Pine Street, New York.

Telephone.—2996 John.

Terms of Subscription, Including Postage.—For the United States and Canada, $3 per annum. European countries, $5 (£1—25 francs). All payments to be made in advance. Single copies, 10 cents.

Remittances should be made either by post office order, express money order, registered letter, or bank draft on New York, payable to the order of A. M. Callender & Co.

The American News Company, Nos. 39 and 41 Chambers street, New York, are agents for this JOURNAL. Newsdealers will send orders to them.

Collections are invariably made directly from this office for subscriptions advertisements, etc. We have agents to solicit the same, but they are not authorized to receipt for money.

The Public Lighting Tables of the American Meter Company will be found in the page advertisement of that Company.

CONTENTS.

An Asterisk (*) denotes an illustrated article.

OFFICIAL NOTICES—

Where to Find the Western Gas Association's Exhibit and the Custodian Thereof at the World's Fair 761

Wrinkle Department, Western Gas Association 761

NOTICE—

Bureau of Information, Ohio Gas Light Association 761

EDITORIALS—

Briefly Told 762

"Broken History" from the St. Louis Fair—Notes.

Proceedings, Thirty-second Annual Meeting, American Gas Light Association—Abstract 762

First Day, Morning Session—Roll Call—Welcomed the Association—Report of Council on Change in Membership—Election of New Members—General Report of the Council—Reports of Treasurer and Secretary—Report of the Trustees, Gas Educational Fund—Report of the Special Committee on Electrolysis—Report from the Research Committee—Reports of Committee on Nominations—Election of Officers—An Invitation—Inaugural Address—Telegrams and Letters of Regret.

*Consumers' Meters, by Mr. B. H. Spangenberg 765

Proceedings, Twelfth Annual Meeting, Michigan Gas Association—Concluded from Page 729 768

*Question Box.

Controversies Over Customs Duties 772

A Type of Promoters to be Avoided 772

ITEMS OF INTEREST FROM VARIOUS LOCALITIES 772

Mayor Collins and the Boston Gas Rate—The Savannah Pipe and Foundry Company—A City's Gas Tithes—Poor San Francisco—Betterments at Duluth, Minn.—Annual Meeting, Toronto, Ont.—Something from Goshen, N. Y.—Contract for the Stacey Company—Reorganization at Flint, Mich.—Another Chapter from Toronto—The Otto Gas Company would like to Sell Gas in Wilmington, Del.—And Other Items.

The Market for Gas Securities 774

[OFFICIAL NOTICE.]

Where to Find the Western Gas Association's Exhibit, and the Custodian Thereof, at the World's Fair.

To the Fraternity: The exhibit of the Western Gas Association, at the World's Fair, St. Louis, is located in Section 33A, Liberal Arts Building, where Mr. Fred. R. Persons, who is in charge of the same, will always be on hand to receive visitors and to explain anything that requires explaining.

[NOTICE.]

Bureau of Information, Ohio Gas Light Association.

CITY OF LINCOLN GAS CO., LINCOLN, ILLS., Oct. 10, 1904.

To the Fraternity: At the last meeting of the Ohio Gas Light Association a Bureau of Information was decided upon, the idea of which is to render assistance to members who may have questions coming up or difficultles arising respecting which they would like some help. This Bureau has been established and is now ready for business. A number of co-Editors have been appointed to whom the various questions will be referred. As this is the first Bureau of Information attempted by any Association, it is hoped that the members will take advantage of its opportunities. The co-Editors are as follows:

Distribution.—E. E. Eysenbach and M. E. Malone.

Accounts and Bookkeeping.—D. W. Low and Chas. Ritter.

New Business and Gas Appliances.—Frank D. Moses, Ralph Woodward and F. Cavanagh.

Chemistry.—H. B. Harrop and Clarence Lomax.

Retort House.—Moses Coombs.

Natural Gas.—W. H. Hammon and Geo. W. Barnes.

All questions should be addressed to the Editor, at Lincoln, Ills.

Very truly yours,
H. L. OLDS, Editor Information Bureau.

[OFFICIAL NOTICE.]

Wrinkle Department, Western Gas Association.

OFFICE OF EDITOR WRINKLE DEPARTMENT, ST. LOUIS, MO., July 25, 1904.

To the Members of the Western Gas Association: We again invite contributions to the Wrinkle Department of the Western Gas Association for the meeting of 1905. The Editor wishes to call the attention of the members of the Western Gas Association, and of the gas fraternity at large, to the fact that the "Western" has done good work in this department in the past; that its Wrinkles have been of value to many, and that it proposes to continue the good work.

The Editor further wishes to suggest that an earnest effort be made to improve the quality of the Wrinkles submitted, as a great many of the devices, while of undoubted practical value, are such as any gas works' foreman should know. We desire the Wrinkles which have a greater bearing on the scientific and technical portion of our business. Of course, there will always be room for the little, handy, practical devices, which so often help us over the rough places. We will gladly receive them, but we should all aim to place the gas business on a par with other scientific and engineering enterprises which are practically in a basis of exact knowledge and high efficiency.

To that end, therefore, we desire to secure a large collection of Wrinkles for the 1905 meeting. Give us the benefit of the mathematical, chemical, thermal and other devices which have helped you in designing or improving your plants; do not hesitate to send in the practical devices which are not on record so far; submit the ideas which have made the business end a success; and, finally, let every individual

LIBRARY OF CONGRESS. NOV 14 1904 SMITHSONIAN DEPOSIT.

contribute his portion, so that the result may be worthy the achievements of the past, and a credit to the Western Gas Association.

The following wrinkle is submitted as a sample to guide others somewhat in working out their contributions to this department. This describes a method of regulating the pressure on the outlet of a holder in proportion to the rate of sendout, and was contributed by the writer to another Association some time ago.

"The essential idea of street pressure regulation is to maintain a certain pressure at the consumers' meters within a small percentage either way of the fixed pressure. As the consumption increases or decreases, the holder pressure should be raised or lowered. This is usually done by having recording pressure gauges located in the district supplied by the holder, and raising or lowering the holder pressure until the best average for the district is reached.

"Now, it is, of course, true that the same conditions of consumption never obtain on successive days or months, and, therefore, the following automatic indicator was suggested by the writer: In the outlet pipe of the holder we place a Pitot tube facing the holder. Naturally, the opening from the Pitot tube which faces the stream of flowing gas gives the pressure due to the sum of the static head plus the impact or velocity head, whereas the side openings give the pressure due to the static head only. Therefore, any variation in the rate of flow of the gas is at once indicated by the variation in differential pressure from the two openings of the Pitot tube.

"By using a very sensitive differential pressure gauge, we can thus observe this variable rate of flow. It is, of course, necessary to calibrate the instrument for each holder to be able to tell what pressures to carry on the outlet pipe for each division on the sensitive differential gauge, and it would probably be well to check this three or four times during the year. The Laclede Gas Light Company has so far secured three satisfactory types of extremely sensitive differential pressure gauges, and we have arranged them with two scales, one of which shows the divisions in millimeters and the other gives the proper pressures to be carried on the holder outlet opposite the indicator on the gauge. The writer purposely refrains from adding drawings or too much detail to the above description, as he merely wishes to submit one idea, which he hopes will suggest many others to help swell the contributions."

We must start the work at once; therefore, please send your ideas to the Editor, 716 Locust street, St. Louis, Mo., and oblige, Yours truly,

W. A. Baehr, Editor Wrinkle Department.

BRIEFLY TOLD.

"Broken History" from the St. Louis Fair.—"St. Louis, Nov. 7th, 1904.—Dear Journal: Very few gas men have looked upon us in the last fortnight; but the general attendance is well beyond the average high point for the past two months. The following gas men registered at the Western Gas Association's booth for the week: Thomas B. Guitteau, Toledo, O.; C. L. Chittenden, London, Eng.; M. G. Reynolds, Anderson, Ind.; L. A. Buck, Marshall, Mo.; L. H. Wilson, Chicago; Paul Challiss, Battle Creek, Mich.; F. E. Luther, Chicago; C. D. Shawl, Cleburne, Tex.; W. A. Reeves, Columbus, O.; George A. Hitt, Indianapolis, Ind.; M. S. Greenough, Cleveland, O.; R. B. Phipps, Fort Smith, Ark. I expect to send you next week some short account of the awards made in the matter of fair recognition of the gas industry. —F. R. Persons."

Notes——

Mr. S. B. Miller has been appointed engineer of the gas department of the Gas and Electric Company, of Bergen county, N. J. The Company is arranging for the construction of a storage holder up to retaining 750,000 cubic feet.

The artificial gas division of the plant of the Troy (O.) Gas Company has been put out of commission. The cause given for the suspension is that it was not possible for the Company to compete with the rates charged by the city for lighting from its municipally operated electric lighting plant.

Mayor Ashley, of New Bedford, Mass., declares that the New Bedford Gas and Edison Light Company should not charge to exceed $1 per 1,000 cubic feet for the gas supplied by it. The Company's proprietors aver that the present rate ($1.30 per 1,000) is a fair one, but announce their willingness to meet the Mayor half-way.

Colonel Frank S. Richardson, of North Adams, Mass., sailed for Europe last Saturday, per steamship "Minneapolis." He will be abroad about 6 weeks. Can it be that the election of a shoemaker as Governor of Massachusetts caused the Colonel to take to the sea?

The properties of the Orange County Gas and Electric Company, of Middletown, N. Y., were sold at foreclosure sale the 10th inst., to Newark (N. J.) capitalists, presumably representing the bondholders. The successful bid was $151,200.

[Abstract.]

PROCEEDINGS, THIRTY-SECOND ANNUAL MEETING, AMERICAN GAS LIGHT ASSOCIATION.

Held in the New Willard Hotel, Washington, D. C., October 19 to 21, 1904.

First Day—October 19—Morning Session.

The meeting was called to order by the President, Mr. Rollin Norris, at 10:15. Mr. A. E. Forstall occupied the Secretary's desk.

The following members were in attendance.

ROLL CALL.

Honorary.

Barker, F. E., Boston, Mass.

Active.

Adams, H. C., Philadelphia, Pa.
Addicks, W. R., New York City.
Africa, W. G., Manchester, N. H.
Allen, W. H., Newark, N. J.
Anderson, W. C., Hackensack, N.J.
Arthur, F. M , Philadelphia, Pa.
Baehr, W. A., St. Louis, Mo.
Barrett, W. E., Scranton, Pa.
Barthold, W. H., Saginaw, Mich.
Battin, H. S., Philadelphia, Pa.
Bayley, C. C., Washington, D. C.
Beadenkopf, G., Baltimore, Md.
Beadle, A. B., New York City.
Beal, W. R., New York City.
Bertrand, P. A., Springfield, Mo.
Bigelow, A. F., Allentown, Pa.
Bowen, W. S., Philadelphia, Pa.
Brown, E C., New York City.
Brown, R. B., Milwaukee, Wis.
Brundrett, E. L., Philadelphia, Pa.
Bryant, C. F., Bridgeport, Conn.
Buck, D., Jr., Coatesville, Pa.
Buck, H. M., Waukesha, Wis.
Buckman, J., Philadelphia, Pa.
Butterworth, C. W., St. Albans, Vt.
Butterworth, I., Grand Rapids, Mich.
Cathels, E., Providence, R. I.
Chollar, B. E., Kansas City, Mo.
Clabaugh, G. W., Omaha, Neb.
Clark, J. A., Jr., E. Orange, N. J.
Clark, J. C. D., St. Louis, Mo.
Clark, W., Philadelphia, Pa.
Clary, E. D., Burlington, Iowa.
Clements, W. B., Mount Vernon, N. Y.
Cobb, B. C., Saginaw, Mich.
Cocke, J. B., Birmingham, Ala.
Coggshall, H. F., Fitchburg, Mass.
Collins, D. J., Philadelphia, Pa.
Combs, R. B., Philadelphia, Pa.
Cooper, W. H., Amsterdam, N. Y.
Corbett, C. H., Brooklyn, N. Y.
Cosgrove, W. L., Atlanta, Ga.
Cowdery, E. G., St. Louis, Mo.
Crafts, H. C., Northampton, Mass.
Cressler, A. D., Fort Wayne, Ind.
Curtis, S. P., Philadelphia, Pa.
Daly, D. R., Jersey City, N. J.
Dell, J., St. Louis, Mo.
Dexter, MacD., Columbus, Ga.
Dickel, C. A., Philadelphia, Pa.
Dickey, C. H., Baltimore, Md.
Dixon, J. A., New York City.
Doherty, H. L., New York City.
Donahue, E. J., Jersey City, N. J.
Douglas, H. W., Ann Arbor, Mich.
Dunbar, C. H., Elgin, Ills.
Dunn, F. S., Albany, N. Y.
Dutton, L. R., Wyncote, Pa.
Dutton, R. H., Hanover, Pa.
Earnshaw, E. H., Philadelphia, Pa.
Egner, F., Norfolk, Va.
Ellis, J. W., Providence, R. I.
Eysenbach, E. E., Binghamton, N.Y.
Ferguson, B. B., Portsmouth, Va.
Forbes, C., London, Ont.
Forbes, J., Chattanooga, Tenn.
Forstall, A. E., New York City.
Fowler, J., Philadelphia, Pa.
Fowler, S. J., Boston, Mass.
Frueauff, F. W., Denver, Col.
Ganser, H. H., Norristown, Pa.
Gartley, W. H., Philadelphia, Pa.
George, T. L., Philadelphia, Pa.
Gerould, C. L., Bloomington, Ind.
Gifford, N. W., East Boston, Mass.
Glasgow, A. G., London, England.
Glass, S. J., New York City.
Golden, J. W., Savannah, Ga.
Gould, J. A., Boston, Mass.
Gould, V. K., Bangor, Me.
Gowen, S. C., New Brunswick, N.J.
Gribbel, J., Philadelphia, Pa.
Guldlin, O. N., Fort Wayne, Ind.
Gwynn, J. W., Bucyrus, O.
Haase, E., Milwaukee, Wis.
Hadden, J. M., Poughkeepsie, N.Y.
Hardick, C. F., Philadelphia, Pa.
Harper, G. H., Altoona, Pa.
Helme, W. E., Philadelphia, Pa.
Holden, T. F., Washington, D. C.
Holzer, E. G., Easton, Pa.
Humphreys, A. C., New York City.
Humphreys, J. J., Jr., Brooklyn, N.Y.
Hurlburt, A., Philadelphia, Pa.
Jelliffe, C. N., New York City.
Johnston, M. E., Newark, N. J.
Keppelman, J. H., Reading, Pa.
Klumpp, J. B., Philadelphia, Pa.
Knapp, I. N., Ardmore, Pa.
Knowles, W. P., Richmond, Va.
Kuehn, J. L., York, Pa.
Lamson, C. D., Worcester, Mass.
Lathrop, A. P., Detroit, Mich.
Learned, C. A., Meriden, Conn.
Learned, W. A., Newton, Mass.
Leetch, J., Washington, D. C.
Linton, S. E., Jr., Savannah, Ga.
Littlehales, T. G., Camden, N. J.
Lloyd, E. F., Detroit, Mich.
Lynn, J. T., Detroit, Mich.
Macbeth, G. T., Yonkers, N. Y.
McCleary, A. J., Philadelphia, Pa.
McDonald, D., Louisville, Ky.
McDonald, W., Albany, N. Y.
McIlhenny, J. S., Washington, D.C.
McIlhenny, J., Philadelphia, Pa.
McIlhenny, J. D., Philadelphia, Pa.
McKenzie, W. H., Sioux Falls, S. D.
McLean, J. R., Washington, D. C.
MacMillan, R., Kansas City, Mo.
Maloney, A. P., Belmar, N. J.
Mann, H. E., Cleveland, O.
Mansur, J. H., Royersford, Pa.
Mayers, J. A., New York City.
Meginnis, N. T., Baltimore, Md.
Merrifield, L. L., Toronto, Can.
Merritt, A. H., Niagara Falls, N.Y.
Merritt, W. H., Lebanon, Pa.
Middleton, R. L., Washington, D.C.
Miller, A. S., Baltimore, Md.
Miller, T. D., New Orleans, La.
Milsted, W. N., New York City.
Molony, M., Philadelphia, Pa.
Morris, W.C., Long Island City, N.Y.
Morrison, H. K., Concord, N. H.
Morton, F. N., Philadelphia, Pa.
Nettleton, C. H., Derby, Conn.
Norcross, J. A., New Haven, Conn.
Norris, R., Philadelphia, Pa.
Nute, J. K., Fall River, Mass.
Nutting, Q. H., Chicopee, Mass.
Old, G., St. Augustine, Fla.
Palmer, L. T., Tonawada, N. Y.
Parker, F. H., Burlington, Vt.
Perry, J. A., Philadelphia, Pa.

Pettes, W. H., Newark, N. J.
Pinckney, E. A., Sag Harbor, N.Y.
Polk, R. W., St. Louis, Mo.
Pond, E. C., Petersburg, Va.
Powers, E. T., Baltimore, Md.
Pratt, E. G., Milwaukee, Wis.
Prichard, C. F., Lynn, Mass.
Purcell, T. V., Chicago, Ills.
Quackenbush, C. H., Ardmore, Pa.
Quinn, A. K., Newport, R. I.
Ramsdell, G. G., New York City.
Randolph, W. W., New York City.
Reitmeyer, A. F., Perth Amboy, N.J.
Rice, H. L., Aurora, Ills.
Riselay, W. S., Buffalo, N. Y.
Roberts, G. J., Philadelphia, Pa.
Robison, C. D., Auburn, N. Y.
Rogers, W. H., Paterson, N. J.
Roohan, P.F., Saratoga Spr'gs, N.Y.
Roper, G. D., Rockford, Ill.
Rowland, C. L., Brooklyn, N. Y.
Rowland, W. L., Philadelphia, Pa.
Rusby, J. M., Philadelphia, Pa.
Russell, D. R., St. Louis, Mo.
Sargent, F. H., Lawrence, Mass.
Sawyer, F. H., Norfolk, Va.
Searle, R. M., Mount Vernon, N. Y.
Serrill, W. J., Philadelphia, Pa.
Seymour, W. W., Tacoma, Wash.
Shattuck, J. D., Chester, Pa.
Shelton, F. H., Philadelphia, Pa.
Sisson, F. N., Albany, N. Y.
Skinner, S., Montreal, Can.
Slade, R. E., Hartford, Conn.
Smart, F. R., Jr., York, Pa.
Smith, J. W., Philadelphia, Pa.
Smith, W. H., Philadelphia, Pa.
Spangenberg, B. H., Phila., Pa.
Spaulding, C. F., Waltham, Mass.
Spinning, W. V., Peru, Ind.
Sprague, L. D., Johnstown, N. Y.
Stacey, J. E., Cincinnati, O.
Stirzel, J. W., Philadelphia, Pa.
Stratton, F. A., Mount Vernon, N.Y.
Stroud, M. W., Philadelphia, Pa.
Tait, F. M., New London, Conn.
Talbott, F., Danville, Va.
Tausigg, J. H., Philadelphia, Pa.
Terhune, C. F., New York City.
Thomas, C. G. M., New York City.
Thompson, P., Philadelphia, Pa.
Tobey, F., Jr., Kingston, N. Y.
Tompkins, J. P., Atlantic City, N.J.
Tuttle, W. B., Long Branch, N. J.
Tyler, W. G., Philadelphia, Pa.
Vincent, G. I., Philadelphia, Pa.
Von Maur, J. D., St. Louis, Mo.
Wainright, A. V., South Norwalk, Conn.
Walker, W. L., Fitchburg, Mass.
Wallace, R. A., Hamilton, Can.
Walters, B. S., Blue Island, Ills.
Waring, G. H., Omaha, Neb.
Warmington, D. R., Cleveland, O.
Whipple, H. S., Rockford, Ills.
Whitcomb, H. D., Jr., Newark, N.J.
White, E. C., Long Branch, N. J.
Whittaker, A. D., Paterson, N. J.
Williams, E. H., Waterbury, Conn.
Williams, L. S., Harrisburg, Pa.
Wilson, W. A., Portage, Wis.
Wolff, S. E., Jackson, Mich.
Wood, W. A., Boston, Mass.
Woollen, A. L., New York City.
Young, P., Conneaut, O.
Young, R. R., Passaic, N. J.
Zeck, C. F., Pensacola, Fla.

Associate.

Atwater, C. G., Chadds Ford, Pa.
Carpenter, H. A., Pittsburg, Pa.
Cartwright, H. R., Philadelphia, Pa.
Oheesman, F. P., New York City.
Crane, W. M., New York City.
Cruse, A. R., Philadelphia, Pa.
DeHart, J. S., Jr., Newark, N. J.
Dickey, E. S., Baltimore, Md.
Eaton, A. B., Chicago, Ills.
Garrison, J. J., Detroit, Mich.
Graves, G. W., Rochester, N. Y.
Harper, H. D., Chicago, Ills.
Higgins, C. M., New York City.
Kellum, B. J., Chicago, Ills.
McDonald, D., Albany, N. Y.
Mueller, R., Decatur, Ills.
Nichols, C. B., Philadelphia, Pa.
Norton, H. A., Boston, Mass.
Osius, G., Detroit, Mich.
Parker, G. W., New York City.
Pearson, J. A., Philadelphia, Pa.
Persons, F. R., Toledo, O.
Potter, T. J., West Roxbury, Mass.
Prendergast, D. J., New York City.
Rancke, L. N., Baltimore, Md.
Roberts, C. V., Philadelphia, Pa.
Rodgers, E. H., Philadelphia, Pa.
Schutt, H. L., Buffalo, N. Y.
Steinwedell, W. E., Cleveland, O.
Warren, H. J., Stamford, Conn.
Wells, F. K., Chicago, Ills.
Wharton, H., Philadelphia, Pa.
Wickham, L., St. Louis, Mo.
Wilbraham, J. S., Philadelphia, Pa.
Wood, E. R., Jr., Philadelphia, Pa.

Junior.

Dunne, P., Baltimore, Md.

The President introduced Captain J. P. Morrow, U. S. A., who

WELCOMED THE ASSOCIATION

to the District and invited the members to share in its hospitalities.

The President, in acknowledging Captain Morrow's invitation and its probabilities, made a very clever speech, after which the regular order was taken up. On motion of Mr. Wm. McDonald, the minutes of the last meeting were approved.

The President called for the

REPORT OF COUNCIL ON CHANGE IN MEMBERSHIP,

which the Secretary read as follows:

WASHINGTON, D. C., October 19, 1904.

To the American Gas Light Association: Gentlemen—Your Council has approved the following applications for membership and submits them to you with the recommendation that they receive favorable action:

Active.

Ames, K. L., St. Joseph, Mo.
Arkwright, P., Atlanta, Ga.
Beardsley, W. D., Easton, Md.
Bengler, H. M., Elmira, N. Y.
Bosley, J. C., Annapolis, Md.
Brown, R. E., Mankato, Minn.
Bourn, W. B., San Francisco, Cal.
*Campbell, S. K., Plainfield, N. J.
Crosby, J. W., Halifax, N. S.
*Cunningham, J. H., Westminster, Md.
*Dashiell, P. T., Newark, N. J.
Dustin, G. K., Hartford, Conn.
*Enright, J. H., Frederick, Md.
Fendig, A., Brunswick, Ga.
Frazer, D. H., Battle Creek, Mich.
Frothingham, F. E., Bellingham, Wash.
*Gavit, E. P., Albany, N. Y.
Gifford, C. H., New Bedford, Mass.
*Gilette, F. A., Waverly, N. Y.
Greim, O. F., Milwaukee, Wis.
*Hart, H. F., Washington, D. C.
Hathaway, E. C., Norfolk, Va.
Jonne, H. E., London, England.
Kerchoff, W. G., Los Angeles, Cal.
Law, A. R., Philadelphia, Pa.
*Loichot, J. L., Canton, O.
*Macbeth, A. B., Kansas City, Mo.
Macy, C., New York City.
Martin, S. S., Sparrows Point, Md.
Mayer, J., Lakewood, N. J.
Mervin, G. T., Montreal, Can.
Miller, J. B., Los Angeles, Cal.
*Morton, H. E., Boone, Ia.
Naphthaly, S. L., San Francisco, Cal.
Osthoff, O. E., Chicago, Ills.
Palmer, E. H., Geneva, N. Y.
*Schmidt, F. W., Jersey City, N. J.
Sharp, L. B., Far Rockaway, N.Y.
Sterling, J. C., Monroe, Mich.
Stetson, G. R., New Bedford, Mass.
*Tutwiler, C. C., Philadelphia, Pa.
*Vollum, W. H., Chester, Pa.
Waters, J. A., Stamford, Conn.
Wyant, R. E., Derby, Conn.

Associate.

*Aikin, H. C., Chester, Pa.
*Azoy, A. C. M., New York City.
Barnes, T. R., Shelton, Conn.
Conroy, J. P., New York City.
Dougherty, W., New York City.
*Fowler, J. S., Philadelphia, Pa.
*Harmount, W. R., Stamford, Conn.
*Herrick, J. H., Albany, N. Y.
*Leamy, A., Pittsburg, Pa.
*Livor, J. E., New York city.
McShane, W., Baltimore, Md.
*Mallory, A. S., New York City.
Miller, F. A., Bradford, Pa.
*Mills, B., Port Chester, N. Y.
*Myers, J. B., Philadelphia, Pa.
*Reeves, E. A., New Haven, Conn.
Riter, T. B., Pittsburg, Pa.
Rutter, T. V., New York City.
*Stadelman, W. A., New York City.
Taplin, F. E., Cleveland, O.
*Thomas, R. H., Philadelphia, Pa.
Vollum, C. N., Philadelphia, Pa.
*Witherden, G.M., Philadelphia, Pa.
*Wood, G. B., Philadelphia, Pa.
Wuderhold, O., Jersey City, N. J.

Junior.

*Barnes, H. L., Hartford, Conn.
Boyd, A. M., Philadelphia, Pa.
Boyer, L. H., Conshohocken, Pa.
Cassedy, G. F., Philadelphia, Pa.
Davis, E. P., Mt. Clemens, Mich.
Eavenson, W.K., Philadelphia, Pa.
Evans, O. B., Philadelphia, Pa.
Gannon, J. J., Savannah, Ga.
Green, J.W., New Rochelle, N.Y.
Jennings, R. J., Mt. Vernon, N. Y.
MacDougall, H.K., E. Orange, N.J.
Neth, J. A., Tarrytown, N. Y.
North, F. S., Yonkers, N. Y.
Pickens, A. G., Waterbury, Conn.
*Rasin, U., Baltimore, Md.
*Schiller, C. C., Baltimore, Md.
Stilliman, A. D., Philadelphia, Pa.
Stevick, C. H., Philadelphia, Pa.
Weisgerber, E., Newark, N. J.
Wilson, R. J., Philadelphia, Pa.
Wilson, W., Easton, Pa.
Zook, S. K., East Orange, N. J.

*Present at meeting.

Transfers to Active from Junior.

Bucher, P., White Plains, N. Y.
Macbeth, G. T., Yonkers, N. Y.
Skinner, S., Montreal, Can.

Number of Applications	—Active	44
" "	—Associate	25
" "	—Junior	22
Total		91
Transfers		3

Respectfully submitted for the Council,
(Signed.)
ROLLIN NORRIS, President. ALFRED E. FORSTALL, Secretary.

ELECTION OF NEW MEMBERS.

On motion of Mr. C. D. Robinson, the President instructed the Secretary to cast the ballot of the Association favorably respecting the Council's recommendations, and the tellers (Messrs. A. G. Glasgow and H. L. Doherty) subsequently reported that the Secretary had complied with the instruction.

The President welcomed the new members, all of whom were invited to share practically in the proceedings.

The next business in order was the

GENERAL REPORT OF THE COUNCIL,

which was as follows:

WASHINGTON, D. C., October 19, 1904.

To the American Gas Light Association: Gentlemen—Your Council has the honor to make its annual report as follows:

A separate report upon applications for membership recommends the election of 91 applicants.

The resignations of 12 active members and 4 associate members have been received and accepted during the year.

The following list of papers has been approved to be read at this meeting:

"Generation of Steam by Waste Heat from Water Gas Sets," by Donald McDonald, Louisville, Ky.

"Distributing Power Throughout a Gas Works by Means of Electricity Generated at a Central Point," by W. A. Baehr, St. Louis, Mo.

"Oxide Purification," by E. H. Earnshaw, Phila., Pa.

"Methods of Charging for Gas," by F. W. Frueauff, Denver, Col.

"Consumers' Meters," by B. H. Spangenberg, Phila., Pa.

"A Rapid Method for the Determination of Total Suiphur in Gas," by W. B. Calkins, St. Louis, Mo.

The Council recommends that the salaries of the Secretary and Treasurer be made $750 per year, and that in addition he be allowed $250 per year for clerical assistance.

Acting on a motion, passed at the meeting of the Council held October 20, 1903, the then President appointed a committee of five members to consider the feasibility and desirability of holding a Congress of American Gas Associations in connection with the Louisiana Purchase Exposition at St. Louis. This committee consisted of Messrs. C. J. R. Humphreys, Chairman; William McDonald, E. G. Cowdery, Irvin Butterworth and Walton Clark.

After considering the subject the committee reported in favor of the holding of a Gas Congress, to be called by the American Gas Light Association. This call was issued and was accepted by the other nine Gas Associations of America. The Congress was successfully held in St. Louis, June 15–16, 1904, immediately after a 1-day meeting of the Western Gas Association, and this latter Association transferred part of the technical programme that had been arranged for its meeting to the Gas Congress. As a contribution toward the expenses of the Congress, the Council of this Association appropriated $500.

At this Congress a resolution was passed providing for the appointment of a committee to consider the feasibility of the merging of the existing Gas Associations into one National Association, with local branches. This committee was to be appointed by the Presidents of the various Associations participating in the Congress, and was to consist of two members from each of the Associations and in addition three members at large. Your President has appointed as your representatives on this committe Messrs. C. J. R. Humphreys, of New York, and William McDonald, of Albany, N. Y., and this appointment has been confirmed by the Council. The Council expresses its sympathy with the aims of this committee and trusts that it will be able to recommend some plan which will increase the efficiency of Gas Association work in America. Respectfully submitted,

ROLLIN NORRIS, President. ALFRED E. FORSTALL, Secretary.

On motion of Mr. C. H. Nettleton the report was ordered accepted and spread on the minutes and its recommendations indorsed and approved.

THE REPORTS OF THE TREASURER AND SECRETARY

showed, as treasurer, up to 30th September, the balance to credit was $1,406.91, which statement was verified by Messrs. E. G. Cowdery and Chas. F. Prichard, of the Finance Committee.

The Secretary's report disclosed the fact that the membership up to September 30th was in total 769, thus divided: Honorary, 11; active, 606; associate, 118; junior, 34. The report further detailed the changes occurring from death, transfers, etc., in full mention.

On motion of Mr. C. H. Nettleton, the reports were accepted and filed.

The President then asked for the

REPORT OF THE TRUSTEES GAS EDUCATIONAL FUND,

which, after a slight preface by its Secretary, Mr. A. E. Forstall, was thus read:

To the American Gas Light Association and Subscribers: Gentlemen—The Trustees appointed at the Twenty-sixth Annual Meeting of Association, held October 17th, 1898, to administer the Educational Fund formed by your subscriptions, submit the following report as to the work done from October 1st, 1903, to September 30th, 1904.

The work of securing renewals of the subscriptions expiring October 1st, 1903, and additional new subscriptions has been successful to the extent that the amount pledged for the current 5-year period is slightly greater than that received during the first five years. This amount is not, however, sufficient to enable more students to be taken care of, and the increase in the number in the class, caused by the attention called to it by the paper read by Dr. A. C. Humphreys at the last meeting of the American Gas Light Association, so taxed the time of the Secretary under the present part-time arrangement, that it was decided early in the year that no new applicants would be admitted until January 1st, 1905, and that, commencing with that date, the membership be limited to a maximum of 150. This is the only change that has been made during the year in the rules governing the class.

With an enrollment at the beginning of the year of over 200, the only way of keeping the work from getting behind, without giving up the individual criticism of the answers, was by using questions that had already been used for the sections that had finished the course, and so saving the time required for preparing new questions and answers. While this is what is done in all educational work, it has the disadvantage in this particular instance of affording to the student who has access to files of the "Proceedings" of the American Gas Light Association, the opportunity to obtain the answers without any great trouble on his part, and some of the members of the Class have not been able to resist the temptation to use the answers which are thus at hand. If our income were sufficient to enable us to assume the expenses for clerical assistance, which are now paid by the Secretary out of his salary, we could arrange to secure a competent man who would devote all his time to the Class work. It is to be hoped that this end can be attained within the near future.

The work of the Correspondence Class has been carried on throughout the year. The members of the Fourth Section having finished the 3 years' course, their connection with the Class ceased on April 1st, 1904. The Section of 1907 started work on Sanuary 2d, 1904, with a membership of 93.

The number of members in each section at the beginning of the year, and the changes that have tak n place during the year, and the names of the members of the Class who have completed the course during the year are shown in detail on the Secretary's report, which is appended.

The Fifth Section now contains 14 members, the Section of 1906, 31, and the Section of 1907, 80, making the total membership in the regular Class 125. One special student is receiving the questions and answers with the Fifth Section, one with the Section of 1906, and 5 special students are receiving the questions and answers with the Section of 1907.

Each additional year increases the value of the card index of the principal articles published in the AMERICAN GAS LIGHT JOURNAL, *Progressive Age* and the *Journal of Gas Lighting* which is kept up-to-date. The Secretary has several times sent lists of references on particular subjects to subscribers inquiring for them.

The surplus fund is made up of a contribution of $1,000, of subscriptions paid in in advance of the time when they are due, of unexpended balances and of interest received on investments. The proper portion of the advance subscriptions will, of course, be drawn out each year to meet expenses, but the unexpended balances and the interest will accumulate into a fund which will be available to assist in carrying on the work in case all the present subscriptions are not renewed when they expire. It is to be noted that this fund now amounts to slightly over $6,000 and brings in almost $300 a year interest.

Respectfully submitted, Trustees Gas Edacational Fund,

WALTON CLARK, Chairman.
ALFRED E. FORSTALL, Secretary.

The appendix to the report included very complete itemized statements by the Secretary and Treasurer, respecting the custody and administration of the funds.

On motion of Mr. W. J. Serrill, the report was accepted and ordered inserted in "The Proceedings," the inclusion to contain the questions and answers sent out and received by the Class during the past year.

The President called for the

REPORT OF THE SPECIAL COMMITTEE ON ELECTROLYSIS,

which Mr. A. G. Glasgow submitted as follows:

Mr. President and Gentlemen: I succeeded only recently to the Chairmanship of this Committee through an overpress of work upon my predecessor; and my announcement at this time is I should like the Committee would assemble immediately upon the adjournment of this morning's session, to enable us to make arrangements that will cause us to present a useful report at the next meeting. I do not think much has been lost through the delay, because everyone must admit the subject is in an embryonic stage. I report progress.

On motion of Mr. Whitcomb the report was accepted and the committee was ordered continued.

The President called Vice-President E. G. Cowdery to the Chair, and the former presented the following

REPORT FROM THE RESEARCH COMMITTEE.

Your Research Committee understands that its chief duties are to keep in touch with what research work is going on amongst the members of the Association, to encourage the undertaking of research work, and to endeavor to get the results of this work before the Association.

In our report of last year we stated that we had received the promise from a number of men who were doing investigation work, and that they would present the result of this work at this meeting of the Association. Of the papers thus promised, we will have at this meeting one on "Purification," by Mr. E. H. Earnshaw, of Philadelphia, and

one on "Consumers' Meters," by Mr. B. H. Spangenberg, of Philadelphia, but the paper on "Naphthaline" has been unavoidably postponed owing to an unexpected delay in completing the experiments. We hope, however, that the member who is working on this subject will be able next year to report the result to the Association.

In addition to these, there are several subjects which are being worked on by members of the Association, and which they hope to be able to get into sufficiently advanced shape for presentation at next year's meeting, but owing to the uncertainties connected with all experimental work, these members prefer not having any definite promises made at this time.

Your Committee feels that in connection with the preparation of programmes for Association work, there is a lack of continuity of effort which might possibly be avoided by closer co-operation between the Research Committee and the Council, and they propose in the future to map out some line of investigation and endeavor to get it followed to a conclusion, even though it may mean a succession of papers on the same subject.

One of these subjects is that of "Consumers' Meters," which is so thoroughly handled by Mr. Spangenberg in his paper for this meeting. There are, however, a number of points not covered by his paper which will bear investigation, and we will endeavor to get further experimental work done along these lines so as to complete the subject. One of the phases of this subject which we would like to see further developed is the question of what can be done to increase the capacity of our present consumers' meters without an undue expense in making alterations.

Another subject which your Committee would like to see taken up and carried to a conclusion is that of "Photometrical Standards of Light." In papers before this Association the subject has been carried to the extent of showing that the pentane lamp varies very little in intensity with changes in barometric pressure, but changes very markedly with variations in the amount of moisture in the air. This subject has since been worked on very thoroughly by investigators abroad, and the amount of this variation with different degrees of moisture has been accurately tabulated.

It is probable that the light given by a given quality of gas burned in a flat flame burner will also vary considerably with the amount of moisture in the air, but, as far as we know, no conclusive experiments have been made to determine whether the amount of variation with the flat flame burner is or is not the same as with the pentane standard, and this is a subject which we think should be carefully investigated.

Your Committee, therefore, will be very glad to hear from anyone who is willing to undertake these experiments, and will also be glad to co-operate in the work, if it can do so.

This Committee will also be very glad to receive from any member any suggestion of work which it can with advantage take up, and these suggestions can be made by writing to any member of the Committee.

ROLLIN NORRIS, Chairman,
ALTEN S. MILLER,
CHAS. F. PRICHARD, } Committee.

On motion of Messrs. J. H. Keppelman and C. H. Nettleton the report was accepted and the Committee instructed to go ahead with its work.

REPORT OF COMMITTEE ON NOMINATIONS FOR OFFICE.

Mr. George G. Ramsdell, Chairman of the Committee on Nominations, said that for obvious reasons the report was made in two sections, the first of which was:

WASHINGTON, D. C., Oct. 19, 1904.

To the American Gas Light Association: Gentlemen.—Your Committee appointed to nominate officers for the ensuing year beg leave to submit the following report:

For President—E. G. Cowdery, St. Louis, Mo.
For First Vice-President—C. F. Prichard, Lynn, Mass.
For Second Vice-President—Chas. R. Faben, Jr., Toledo, O.
For Third Vice-President—A. E. Forstall, N. Y.
For Members of Council (to serve 2 years)—E. H. Earnshaw, Phila., Pa.; Henry L. Doherty, Denver, Col.; William McDonald, Albany, N. Y.; A. K. Quinn, Newport, R. I.

Respectfully submitted,
GEORGE G. RAMSDELL,
EDGAR T. POWERS,
W. L COSGROVE,
WM. MCGREGOR,
GEORGE MCLEAN, } Committee.

Mr. E. T. Powers then submitted the following supplemental report from the Committee:

WASHINGTON, D. C., OCT. 19, 1904.

To the American Gas Light Association: Your Committee on Nominations begs leave to make the following additional report:

For Secretary and Treasurer—George G. Ramsdell, N. Y.

EDGAR T. POWERS,
W. L. COSGROVE,
WM. MCGREGOR,
GEORGE MCLEAN, } Committee.

ELECTION OF OFFICERS.

On motion of Mr. Walton Clark, the Secretary was instructed to cast the ballot of the Association in favor of the election to office of the gentlemen named in both reports. Messrs. W. A. Learned and John H. Keppelman were appointed tellers, who in due time reported that the instruction had been carried out.

In response to an invitation by the President that the officers elect should make some verbal token of the action of the Association, suitable acknowledgments over their promotions were made by Messrs. Cowdery, Prichard and Forstall.

AN INVITATION.

Mr. John Leetch, as General Manager of the Washington (D.C.) Gas Light Company, invited the Association to visit the Company's works, either in *posse* or otherwise, assuring the body that it would be well taken care of by the Company and its aides, Messrs James S. McIlhenny and Thomas F. Holden. Mr. Leetch also said that the Company was prepared on Friday to tender the Association a trip to Mount Vernon that he was sure would be enjoyable. The invitations were accepted with unanimity.

First Vice-President Cowdery assumed the Chair and President Norris read his

INAUGURAL ADDRESS.

[For the text of President Norris's address, see JOURNAL, Oct. 24, p. 643.]

On motion the address was received and ordered referred to a committee with instructions to report thereon at a later hour. The Chairman appointed as such committee Messrs. A. G. Glasgow, N. W. Gifford and W. A. Baehr.

The Secretary announced that he had received many

TELEGRAMS AND LETTERS OF REGRET

over the inability of the senders to be present at the meeting. Notable amongst them were those from Mr. O. O. Thwing, President of the Western Gas Association; from Mr. W. H. Pearson, of Toronto, ex-President of the Association; from Mr. George H. Warmington, of Cleveland, O.; from Mr. James W. Dunbar, Secretary of the Western Gas Association; and from Mr. Edwin E. Witherby, of New York.

[To be Continued.]

Consumers' Meters.

[A paper prepared for and read at the Thirty-second Annual Meeting of the American Gas Light Association, by MR. B. H. SPANGENBERG, Philadelphia, Pa.]

In recent years there has been quite a little discussion of the non-uniformity of consumers' meters, but little progress has been made toward establishing any standard. As the 2-diaphragm dry gas meter is the type most commonly used in this country for artificial gas, the writer in this paper will consider only this style of meter, which was invented by John Malam, an Englishman, in the year 1820, but which was very little used prior to the year 1844 (see King's Treatise on Coal Gas, Vol. III., pages 24, 25, 26, edition of 1878).

A very complete and interesting account of the dry gas meter will be found in the paper entitled "History of the Gas Meter," written by Mr. Wm. McDonald, in the year 1894. See Prog. Age, Vol. XII., p. 240.

The dry gas meter of to-day differs very little, if at all, either in form or in principle, from the meter of 60 years ago. In spite of the fact that many meters have been patented, manufactured and put on the market, which were intended to be greatly superior to the old-fashioned, 2-diaphragm, plain "D" slide valve dry meter, this good but much maligned friend of the gas man still continues pre-eminent as arbiter between the gas company and the consumer. The writer believes that this will continue to be true for a sufficient length of time to warrant an earnest effort at standardization, and believes that every gas manager would like to see the day when, on hearing a 3-light, 5-light or any other size of meter spoken of, he would have a clear idea of what the term means, instead of a hazy conception of what perchance it might mean.

It is undoubtedly important that, for a certain estimated consumption per hour, the proper size of meter should be installed to safely and

surely supply the amount of gas needed, and to supply it without perceptible fluctuation of flame. It is also important, should any derangement occur in the meter while in use, that it may be removed and replaced by another one of the same dimensions, of exactly the same sized connections and of the same capacity for delivery. It is further important to the gas manager, that for a certain size of meter case—that is, for a meter occupying a certain amount of space, determined from its outside dimensions—that that size of meter should be so designed and built as to be able to deliver the greatest amount of gas per hour which it is possible for that size of meter to deliver, consistent, of course, with correct registration of the amount so delivered. It is of equal importance that meters should be so designed and built as to give the greatest length of service before requiring repairs, and so constructed that, when repairs do become necessary, they can be made with the least possible expenditure of time and money.

The writer, in discussing this subject, will do so in the following general order:

1. Nominal *vs.* actual capacities. Under this heading will be shown a series of tests of the actual capacities of a large number of new meters, bought during this year from seven representative manufacturers, as well as a series of similar tests and some experiments made with older meters from some of the same manufacturers.

2. A discussion of the proper size of meter to be installed, calling attention to the difficulties of doing this under the present nomenclature, and to the excess investment due to not being able to fully utilize actual capacities.

3. Standard dimensions and connections.

4. General character of the interior working or moving parts.

5. An account of the designing and building of some experimental meters, having in view the determination of the limits of capacities.

6. A plea for uniformity.

First Section.—*Nominal vs. Actual Capacity.*

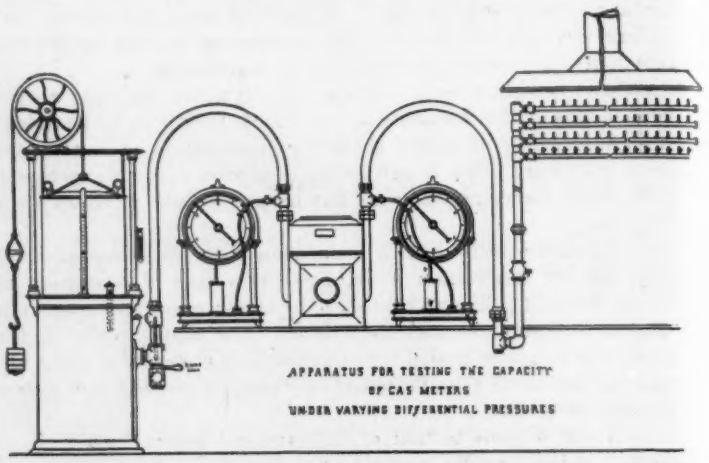
It is quite generally claimed that the present nomenclature of meters is far from rational, that improvements in capacity value have been made by some manufacturers, but not by others, and consequently marked differences exist in actual capacities as compared with nominal sizes.

In order that a comparison might be made between the nominal and actual capacities of the different makes of meters as furnished to-day by the leading manufacturers, in the month of March, this year, 50 3-light, 50 5-light, 50 10-light, 30 20-light and 30 30-light meters were ordered from each of seven leading manufacturers (a total of 1,470 meters), with a view of determining what differences, if any, existed in the outside dimensions and in the capacities of the different makes.

These meters were all tested for capacity under exactly the same conditions, and these conditions approached as closely as possible the conditions under which a meter operates in actual service. On the sketch on the following column it will be noted that an ordinary 5-foot meter prover was used as a reservoir for the gas passed through the meter under test.

The operation of testing was as follows: The meter was connected as shown on sketch; gas was admitted from the street main to the holder; after filling the holder, the supply from the street main was closed off, outlet from holder was opened, allowing gas to pass from the holder through 3 feet of 2-inch piping and 5 feet of one and one-quarter inch connecting hose; an outlet to an arch gauge was inserted between the end of this hose and the inlet union to meter; the gas, passing through the hose, entered the meter, and, passing through the meter, entered a similar length and size of hose between the outlet of the meter and a 6-foot run of 2-inch piping, which terminated in a bank of burner bars; between the outlet union of the meter and the beginning of the outlet hose an opening was inserted for an arch pressure gauge; the gas, after passing through the meter and the outlet connecting hose, and the run of piping and the burner bars, issued from the burners on the bars; all tests were made with the burners lighted, and a sufficient number were lighted in each case to maintain through the meter the desired differential pressure; the pressure on the arch gauge at the inlet of the meter was in all cases maintained at 2.0 inches; the pressure on the arch gauge at the outlet of the meter was likewise maintained in all cases at 1.7 inches, 1.6 inches and 1.5 inches, respectively, for the .3, the .4 and the .5-inch drop in pressure desired through the meter; these arch gauges were specially designed gauges having a scale with .02 divisions of an inch; these divisions were sufficiently large to allow readily of .01-inch readings, and consequently all pressure loss readings are well within the limits of .01 inch. The scale on the meter prover was likewise subdivided into .02 cubic feet divisions, and these divisions were also of such a size as to be easily subdivided by the observer into .01 cubic foot divisions.

The tests were conducted in the following manner: Each meter was first connected on the inlet side only; gas was allowed to



APPARATUS FOR TESTING THE CAPACITY OF GAS METERS UNDER VARYING DIFFERENTIAL PRESSURES

flow through the meter until it was completely purged of air; the outlet opening was then sealed off by hand, the full pressure of the holder thus being thrown on all gas joints between the holder and the meter outlet; any leak would be indicated by the holder falling; after all joints were thus proven gas tight, the hose was connected to the meter outlet screw; gas from the holder was then allowed to pass through the meter and lighted at the burners, and a sufficient number of these burners were lighted, extinguished or adjusted to a flame of sufficient size to maintain through the meter the desired differential loss in pressure; to maintain a constant initial pressure of 2.0 inches at the inlet of each meter, it was necessary to add or remove weights from the holder; on account of the fluctuation in pressure at the outlet of the meter, the needle of the outlet gauge showed a constant movement above and below the desired reading, but in all cases an adjustment of burners was made until the variation above equalled the variation below the line of desired reading.

In a series of preliminary tests, it at first seemed almost impossible to regulate the burners so as to equalize these variations, but after making a good many preliminary tests and providing enough men, this difficulty was overcome, and it is safe to say that the readings as shown in table "A" (in Appendix) are true readings with an error of considerably less than 1 per cent., including the personal equation of the observers, and this applies alike to all of the meters which were subjected to this comparative test.

In making these observations, three men were constantly employed; two of these men having had very extended experience in the making of capacity tests, the other man being an inexperienced man, whose only duty it was to light or extinguish the burners, or adjust any single burner on the burner bar, as directed by one of the experienced men; one of the experienced men operated the gas supply to and from the meter prover, and observed both gauges during the burner adjustment for the desired loss in pressure; the second experienced man also observed both gauges during this burner adjustment, and directed the third man in his duties. After the adjustments had been made the test was started, with the gas flowing through the meter at the desired differential pressure, when one of the lines indicating .1 foot division on the holder scale was exactly opposite the scale indicator; at this instant both men noted the reading of the holder scale, and simultaneously a stop watch was started by the man controlling the gas flow; both men then turned their attention to the readings of the arch gauges, at the same time observing the holder scale and the number of seconds passed on the stop watch; the length of run was 1 minute; at the instant of completion of the 1-minute run, the cock controlling gas flow from holder was quickly closed; both men took a reading of the holder scale at this point, and independently worked out the difference in the two holder readings; the difference of these two readings being the amount passed through the meter in 1 minute; this difference multiplied by 60 gave the amount which the meter would pass per hour; if, during the 1-minute run, the differential pressure being observed by both men, varied at all, the test was stopped and a new adjustment of burners and another test were made.

With the 20-light and 30-light meters the length of run was only ½ minute, with occasional runs equalling 1 minute.

A thermometer was inserted with its naked bulb directly in the flow of the gas, in a tee in the outlet line from gasholder, and frequent readings were taken.

No corrections have been made for differences in temperature or

specific gravities while making the tests, but average temperatures of 79° F. and specific gravities of .64 are approximately correct.

Table "A" (see Appendix) shows the capacities of each of these meters under varying differential pressures of $\frac{3}{10}$ inch, $\frac{4}{10}$ inch and $\frac{5}{10}$ inch. It was intended to show these capacities under differential pressures of $\frac{1}{10}$ inch and $\frac{2}{10}$ inch also, but on account of the amount of time required to determine these capacities the test was abandoned, believing that the capacities under $\frac{3}{10}$ inch, $\frac{4}{10}$ inch and $\frac{5}{10}$ inch are those which are most valuable for our purpose.

The summary of Table "A," immediately following this, shows that great differences do exist in meters manufactured during this year.

It must be borne in mind that these are differences of the average capacities of a fairly large number of meters of different makes. Comparison of individual meters, as shown in Table "A," will reveal still greater differences.

The 3-light capacity per rated light is the largest, and the 5-light capacity per rated light is just 2 times the 30-light capacity per rated light, a rapid decrease showing in the intermediate sizes.

These figures show conclusively that the rated capacity in lights does not bear any fixed relation to the actual capacity in cubic feet per hour.

Comparing the rated capacity of a 5-light meter with the rated capacity of a 30-light meter, the proportion is 1 to 6, but comparing the actual average capacity per hour of a 5-light meter with the actual average capacity per hour of a 30-light meter, the proportion is only 1 to 3; again, comparing the rated capacity of a 10-light meter with the rated capacity of a 30-light meter, the proportion is 1 to 3, but comparing the actual average capacity per hour of a 10-light meter with the actual average capacity per hour of a 30-light meter. the proportion is only 1 to 2.

SUMMARY OF TABLE "A."—*Average Capacities Per Hour.—Makers.*

Size	Loss in Inches.	No. 1.	No. 2.	No. 3.	No. 4.	No. 5,	No. 6.	No. 7.	All.	Max.	Min.	Differences in Cubic Feet.	Maximum Exceeds Minimum.
3-Lights. Average of 50 meters....	.3	40.91	†28.37	*44.17	39.01	38.78	40.90	44.03	39.45	44.17	28.37	15.80	56 per cent.
	.4	57.48	†45.84	*61.62	51.47	52.75	57.27	55.80	54.60	61.62	45.84	15.78	34 "
	.5	70.85	†58.68	*77.17	61.73	65.34	67.87	66.08	68.82	77.17	58.68	18.49	32 "
Average temperature.....	..	78	84	79	78	77	76	76	...	...	..	....	....
5-Lights. Average of 50 meters....	.3	77.07	†53.18	57.75	58.58	71.04	*81.35	71.76	67.53	81.35	53.18	28.17	53 "
	.4	91.46	†66.30	72.92	73.75	90.09	*94.76	84.23	81.94	94.76	66.30	28.46	43 "
	.5	104.41	†80.97	87.32	88.40	102.86	*110.10	96.83	95.84	110.10	80.97	29.13	36 "
Average temperature.....	..	79	81	74	75	71	74	82	...	...	...	....	....
10-Lights. Average of 50 meters....	.3	84.40	†83.02	97.91	98.95	83.95	*121.10	115.62	97.85	121.10	83.02	38.08	46 "
	.4	106.73	106.09	117.28	119.16	†104.54	*147.40	145.82	121.00	147.40	104.54	42.86	41 "
	.5	†124.44	124.87	137.81	141.32	125.34	*171.86	167.22	141.84	171.86	124.44	47.42	38 "
Average temperature.....	..	81	77	79	79	80	76	81	...	...	...	....	....
20-Lights. Average of 30 meters....	.3	168.84	†99.20	*181.66	160.60	103.96	173.32	144.40	147.43	181.66	99.20	82.46	83 "
	.4	*218.70	†139.30	212.50	203.44	139.64	211.44	185.02	187.15	218.70	139.30	79.40	57 "
	.5	*252.44	167.70	239.48	239.92	†165.26	242.02	219.48	218.04	252.44	165.26	87.18	53 "
Average temperature.....	..	79	83	81	81	79	78	80	...	...	...	....	....
30-Lights. Average of 30 meters....	.3	177.72	†177.70	189 58	192.36	*242.50	231.20	179.08	198.59	242.50	177.70	64.80	36 "
	.4	224.96	230.96	236.30	233.44	275.04	*290.96	†219.58	244.46	290.96	219.58	71.38	37 "
	.5	262.86	275.50	284.12	268.88	319.02	*341.92	†260.38	287.53	341.92	260.38	81.54	31 "
Average temperature.....	..	80	78	78	81	84	83	78	...	...	...	....	....

*Maximum average capaciry per hour in cubic feet. †Minimum average capacity per hour in cubic feet.

From the foregoing summary the following table has been compiled, showing more clearly the disproportion of rated to actual capacities:

TABLE "B."

Size.	Loss in Press. Inches.	Maximum Capacity. Per Hour.	Maximum Capacity. Rated Light per Hour.	Minimum Capacity. Per Hour.	Minimum Capacity. Rated Light per Hour.	Diff. Pr. Rated Light.	Average Capacity. Per Hour.	Average Capacity. Rated Light per Hour.
3-light.	.3	44.17	14.72	28.37	9.46	5.26	39.45	13.15
	.4	61.62	20.54	45.84	15.28	5.26	54.60	18.20
	.5	77.17	25.72	58.68	19.56	6.16	66.82	22.27
5 "	.3	81.35	16.27	53.18	10.64	5.63	67 53	13.51
	.4	94.67	18.95	66.30	13.26	5.69	81.94	16.39
	.5	110.10	22.02	80.97	16.19	5.83	95.84	19.17
10 "	.3	121.10	12.11	83.02	8.30	3.81	97.35	9.78
	.4	147.40	14.74	104.54	10.45	4.29	121.00	12.10
	.5	171.86	17.19	124.44	12.44	4.75	141.84	14.18
20 "	.3	181.66	9.08	99.20	4.96	4.12	147.43	7.37
	.4	218.70	10.93	139.30	6.96	3.97	187.15	9.36
	.5	252.44	12.62	165.26	8.26	4.36	218.04	10.90
30 "	.3	242.50	8.08	177.70	5.92	2.16	198.59	6 63
	.4	290.96	9.70	219.58	7.33	2.37	244.46	8.15
	.5	341.92	11.40	260 38	8.68	2.72	287.53	9.58

Taking the figures under column "Average Capacity per Rated Light" a difference, in capacity per rated light, is shown as follows:

Size.	.3 Inches.	.4 Inches.	.5 Inches.
3-light.....	13.15	18.20	22.27
5 "	13.51	16.39	19.17
10 "	9.78	12.10	14.18
20 "	7.37	9.36	10.90
30 "	6.63	8.15	9.58

With older meters, our first comparative tests and experiments date back several years.

Great differences were discovered in the capacities of the different makes of meters, notably in the 5-light size. Less than four years ago we were receiving a certain make of 5-light meters which had an average capacity of only 65 cubic feet per hour, with .5-inch pressure loss through the meter. The 5-light meters of this same make now have an average capacity of more than 100 cubic feet per hour with this same loss in pressure.

Some experiments, having several objects in view, but bearing also on these differences in capacities, were made in September and October, 1903, as follows:

Ten 5-light meters of Maker No. 3, and the same number of Maker No. 4, being old meters removed from use, were stripped, boiled out, entirely refitted with new diaphragms, and adjusted to work freely prior to making the capacity tests given in Table "C" under "Before Alterations." At the completion of these tests, the meters were fitted with 10-light valves, 10-light forked channels, 10-light diaphragm channels, and the inlet and outlet openings under table, and the opening through table were enlarged. The long channels and the inlet and outlet columns were not changed. The results obtained are shown in Table "C" under "After Alterations."

These meters were fitted with small diaphragms, which did not touch the inner cases at any point (this subject will be treated of further on), and made eight revolutions per cubic foot passed, both before and after alterations in channels and valves. Great care was taken to maintain all conditions as nearly alike as possible in both tests, excepting the parts changed.

(To be Continued.)

THE Steiner Brothers, of Birmingham, Ala., and New York city, who have owned and operated on proprietary account the gas works at Meridian, Miss., have sold the rights and business thereof to the owners of the local electric lighting concern.

[Concluded from Page 729.]

PROCEEDINGS, TWELFTH ANNUAL MEETING MICHIGAN GAS ASSOCIATION.

HELD IN JACKSON, MICH., SEPT. 21 AND 22, 1904.

SECOND DAY—AFTERNOON SESSION.

The Question Box, edited by Mr. E. F. Lloyd, of Detroit, Mich., was then considered, after which the meeting was declared adjourned. The contents of the

QUESTION BOX

and the discussion thereon were as follows:

No. 1. "In what particulars should a National Gas Association differ from local Associations?"

Mr. Butterworth—I think the local Associations are more apt to discuss matters pertaining to local conditions, laws and ordinances where these National Associations in the first place would not, and there would at least be that distinction; but I am not prepared to go into these various differences. I believe the movement is a good one and that some plan can be organized by which all could work in harmony with a set purpose in view. I am not prepared to discuss the question fully.

No. 2. "To what extent has a standard method of accounting been employed by members of the Michigan Gas Association?"

Mr. Butterworth—Probably half a dozen or more in this State are keeping their books for accounting work by a certain standard.

Mr. Lloyd—Not a standard that is open to the public?

Mr. Butterworth—Yes, sir.

Mr. Lloyd—It would hardly be a matter that we could discuss here.

Questions Nos. 3, 4 and 5 were not discussed.

No. 6. "Is it true that coke breeze deteriorates rapidly immediately after production? If it is true, what is the percentage of loss, and why does it occur?"

Mr. Butterworth—I remember at Denver, Col., that 300 or 400 tons of breeze when piled up would become much finer in that dry air.

Mr. Lloyd—Did you notice that the quality of coal had anything to do with it? I rather fancy that the questioner in this case might have used some of the breeze that was standing out and did not get as good results from it. I am inclined to think that breeze standing out would absorb a large proportion of water and thereby would be less efficient.

Mr. Slater—You have expressed my idea, Mr. Chairman.

No. 7. "Would it not pay the Michigan gas companies to provide sheds for the storage of their coke?"

Mr. Ewing—I think gas companies that produce any considerable amount of coke should most assuredly provide ample storage for all they want to carry in the winter season. I think the larger companies will carry from 25 per cent. to 30 per cent. of the total amount of their make at the beginning of the winter season. Coke is bulky for the consumer to store. Dealers won't handle it for the amount it brings them, and it behooves the gas companies to provide ample storage. I think the demand for coke in Michigan has increased more rapidly than the amount produced, and that most companies will have smaller stocks the 1st day of January in proportion to their sales than they had last season.

Mr. Douglas—I think anyone who had coke out doors last winter would answer that question in the affirmative. A number of companies had coke in such condition at the time of the demand for it that it was not in shape to put on the market. In order to create a demand for coke and maintain the coke business we must deliver it in good condition, and dry.

Mr. Butterworth—I want to go on record as saying that the question should be answered in the affirmative.

Mr. Russell—Cincinnati does not store any coke. It is sold as fast as it is made.

Mr. Wolff—Our experience last winter was very much in line with that reported by Mr. Douglas. I should say no company could afford to have sufficient storage to take care of all the coke we make from the time of production to the time in the spring or until such time in the fall as the sales exceed daily production.

Mr. Douglas—I think that in the proper working of the coke trade the necessary storage should be at least one-half. I think our customers would store a large proportion of the coke if the trade were handled right and the proper inducements offered.

Mr. Ewing—I do not think that is true in the larger cities. The larger the city the smaller the storage capacity for coke. I think this year a larger per cent. of fuel has been put in storage than ever before.

Mr. Butterworth—I take issue with Mr. Ewing in the matter. I think by offering slight inducements they might store large quantities for us. In Grand Rapids one dealer stored 50 car loads of coke.

No. 8. "Should we have a uniform price for gas coke when quoting to the small trade throughout the State?"

A Member—Local trade, or trade shipped by freight?

Mr. Lloyd—Shipped by rail to various points, I presume.

Mr. Lloyd—It seems to me this item of coke is becoming one of the most important questions of revenue, so important that it would be advisable for us, rather than to pass a question of this character, to have a committee appointed, consisting of not more than two, who jointly could handle the subject to see whether, without inequity to any company, each company should be confined to its rational territory. The gas towns are probably about 20 or 30 miles apart on an average, and that territory properly worked by a local company should be capable of absorbing practically all the coke made by the gas company, and if it is the sense of the meeting I would like to see the appointment of a committee to report at a later meeting, as to whether action could not be taken that would prevent the undue cutting of price.

A Member—That is a question which would be a proper one for a National Association.

No. 9. "What is the difference in fuel economy in both coke and coal firing in half-depth, three-quarter-depth and full-depth benches?"

Mr. D. R. Russell—I think that is rather out of the thinking in a general way, for it would have to be answered in a general manner, for so many different results are gotten by different companies. I think that the same relative showing would be made by using either coal or coke. I have not seen this question until just now. Taking, for instance, a full-depth bench as a starting point, you see you would save that over a three-quarter-depth 20 per cent., and you would save on a full-depth bench over a one-half-depth bench 30 per cent. Is that, as I understand it, the way you wanted the question answered?

Mr. Lloyd—Correct.

Mr. H. Russell—The question is, if I undestand it correctly, you want the saving, using the same kind of fuel in the same calculation in the different depth benches. If you were using coke, what would be the saving of a full-depth over a three-quarter depth bench, and the same thing would apply to coal. That is my opinion in a general way.

Mr. Lloyd—It might possibly answer the purpose a little better if you could in a general way indicate approximately the pounds per ton of coal carbonized in the three kinds of firing.

Mr. D. R. Russell—You would like to know about how many pounds of coke are generally used to a ton of coal carbonized in a bench of 6's.

Mr. Lloyd—Yes, sir.

Mr. D. R. Russell—I think the average would be about 27 per cent. of the coke, or in other words 251 lbs. to the ton, 312 lbs. or 24 per cent. on full-depth benches. A good many companies secure better results, but taking it throughout off and on I think these are very fair figures from the reports I get and the experiments I have had. Using a good grade of coal a ton of coal is required to carbonize 6 tons in the retorts. Had I seen this question sooner I could have made some figures on it.

Mr. Steinwedell—As I read the question the man who asked it wants to know the relative amount of coal and coke necessary in each one of these experiments. If in a half-depth bench it took so many pounds of coke, how many pounds of coal would it take? In a half-depth bench of 6's 1,000 pounds of good coke are about equal to 1,350 pounds of nut coal. That is, it will take more nut coal of the ordinary stamp of coal grade than it will of coke.

Mr. Dewey—In the paper I read I want to call attention to Chart No. 6. You will find I have put a great deal of careful study on that Chart, and in this connection I might say regarding full full-depth, three-quarter and half-depth benches, this Chart would pretty nearly answer that question if a person wished to go into it carefully. For instance, our benches are simply heating machines, as you might call them, from which we are trying to get back as great an efficiency as possible from the fuel. In a full depth bench they have a great deal of recuperation, and by looking at this Chart, taking 17 per cent. as the best practice, I think a careful handling of the benches ought to get our waste to 17 per cent. at least. In half-depth benches we know, of course, the temperature of the waste gas is high; take 500° for argument. In that case the fuel efficiency would be 75 per cent., and I believe most of us, if we carefully used that Chart, could get the temperature of the waste gas and answer the question for ourselves. It is simply a question of the

waste gases combined, provided we have no leaks in our benches. I know that the temperature of waste gases under ordinary working conditions, in fairly high heats, would run considerably greater thon 500°, and in full-depth benches the waste gas flue at the top of bench ought not to show any color, which means that it is considerably below 500°. I have never taken the temperature definitely, and I simply suggest this as a means of arriving accurately at the efficiency of different types of benches.

No. 10 was not discussed.

No. 11. "Is it proper for a gas company to make a special price on gas for gas engines which will compete with gasoline, or is it better practice to make no concession in price except gas in large quantities?"

Mr. Douglas—I believe the only equitable price for gas is a quantity price. What they use the gas for is no measure of the price we should charge for it.

Mr. Butterworth—There is a lot of leeway for talk on this question. We could spend the afternoon on it. The first part of the question I think could be answered in the affirmative. It is proper for them to do it if it is policy; in fact, I think Mr. Douglas would admit that it is a question of policy. In some instances the railroad companies made lower rates for hauling freight, and the gas companies would seem justified in making special rates for gas. I think the average consumer would regard the question in the light that Mr. Douglas does. He does not see why the price should be fixed wholly on the purpose for which it is used.

Mr. Lloyd—A great many use gas only for lighting, and in order to equalize output to that which was sold during the day a special price for gas used for fuel purposes would have to bs fixed. Gas for fuel purposes is like the story of the camel who stuck his head in the tent to the exclusion of all others. We are selling gas for the different purposes of illuminating and cooking, but we are going to use two elements in fixing the price of gas to the consumer. The first is the quantity of gas the consumer uses; and the second the service element which he requires; and it is obvious that it would not do to give the same price to two men, each of whom wanted to use 10,000 feet an hour, if one wanted to use it between 6 and 8 in the morning, and the other between 9 and 10. For instance, if a man wanted to use a large quantity of gas, when everybody else wanted to use the gas, it is not equalizing our load but simply making it worse, and he should pay a higher price for it. A third element is that of time. If a man wants to use a large quantity of gas in a short time at the peak of your load, that would not be equalizing. Consequently we come to three prices for gas—used on illuminating gas, fuel gas and industrial account. Illuminating gas is that which comes as a peak load, just in the few hours after dark. Fuel gas is that which comes in 3 peaks, morning, noon and night. Industrial gas is that which fills in the gap, starts at 7 A.M., when the cooking is over, and ceases at 12, when the cooking starts again, and begins at 6 before the night load comes. I think these three elements cover it.

No. 14. "With gasoline at 15 cents per gallon, at what price can gas be sold to successfully compete in the power business?"

Mr. Traver—Ordinary gas would cut the price in half, so a supply to a 2-horse power engine could be laid on at 75 cents.

Mr. Schacklette—I think in Detroit gas competes very well with gasoline. Few gasoline engines are used there. Gasoline is sold at 10 cents per gallon in barrel lots in Detroit.

No. 15. "Which is the better incandescent gas burner for gas companies to recommend? The new 'Air-Light' or the regular burners?"

Mr. Ewing—I would say, generally speaking, that the "Air-Light" is better suited for store light, but not so well adapted for residences, on account of the heat.

No. 16. "Would it not be to the interest of gas companies to push circulating rather than instantaneous water heaters?"

Mr. Chamberlain—I think that no other reply, having looked into the matter a little, can be made than that the circulating tank is the better, not only from our standpoint but from that of the consumer. From our standpoint the circulating water heater does not require so large a meter or so much pipe. For instance, the instantaneous heater, while using less gas, consumes it at a much higher rate per hour than the circulator. Another thing, from the consumer's standpoint the instantaneous heater is more expensive and its use is more limited. It can be used at only one point, say in the bathroom, to heat the water for use therein, whereas a circulating water heater can be connected with the tank and hot water drawn off at the laundry and sink and in the bathroom and wash bowl. I think there can be no question that the circulating water heater is the better.

Mr. Douglas—I think there is some exception to this. Where the water is extremely hard, and containing considerable lime, a tank heater would likely give trouble where an instantaneous heater would not.

Mr. Hess—I should say by all means a boiler heater, because the instantaneous heaters are small users of gas.

Mr. Engle—My experience in small towns is that the instantaneous heater is called for oftener than the circulating heater. I can sell two to one of the instantaneous heaters. Of course, on Saturday nights when the demand for baths is great and these heaters are prominently in use, the lighting is not good, consumers do not use the instantaneous heater with the same care they give to the other form. Where you place a boiler heater you will sell more gas, because the consumer can burn it longer without interfering with the lights.

Mr. Wolff—I want to go on record as saying that an instantaneous heater is an unsanitary, dangerous thing to have in any house. I would not sell one if I were not obliged to.

There was no discussion on Questions 17, 18, 19, 20 and 21. Questions 22 and 23, which were debated together, are:

No. 22. "Would it not be good business and good policy for a gas company to overhaul during the summer every service pipe that was trapped off or frozen up, even once, during the preceding winter, and put it in such condition that the consumer will not again be out of gas on this account?"

No. 23. "Would it not pay gas companies in northern latitudes to provide some means, by desiccation, compression or otherwise, for removing the moisture from their gas during the winter months for the purpose of preventing the stoppage of mains, services and meters by deposits of frost from condensation?"

Mr. Frost—I know of a case of high pressure distribution where the gas is sent through at 30 pounds. Just after leaving the works it passes through a device similar to a steam separator, and all the drip water seems to be deposited therein. They have no trouble with freezing; in fact, they had practically no trouble at all.

Mr. Lloyd—This case of compression would have to be subsequent to the gas bieng stored, otherwise it would pick up moisture from the holder.

Mr. Lloyd—Has anyone here had experience with distribution of gas under high pressure? The question came up this year at the meeting of the New England Association of Gas Engineers. Two gentlemen who are supplying nearby towns with gas, in one case using high and in the other low pressure at the end, in either case going through a holder, testified they had a great deal of trouble in the distribution, but in one case not a single freeze was reported, indicating that the large proportion of the difficulties under which we labor were caused by the freezing of the vapor in the gas carried in the system of distribution.

Mr. Butterworth—I think that might be worth investigating. It would pay them to compress their gas at a low pressure, squeezing the moisture out of it at the works, allowing the gas to enter the mains dry or in a dry state. Then we would not have trouble from freezing. It is a serious matter when the consumer finds himself out of gas now because he does so much with it—lights his house, heats his bathroom, uses it for cooking. The failure of the gas supply puts him in a bad fix, and it behooves the gas companies to investigate the question of squeezing out the moisture.

Mr. Barthold—Last winter at Grand Rapids about one-third of our consumers were supplied "over the river" through a pipe going over the bridge, 600 feet long. That pipe is exposed to the air, of course, and the moisture in the gas is condensed, and in the gas that went to the other parts of the city we had six times as many freeze-ups as on the other side of the river. My point is to employ, if possible, some chemical to take up the best part of the water. A good plan is to have a very large tank, 15 or 20 times the area of the pipe, on the outlet of the works and let the gas pass slowly through it. We know we have avoided difficulty by the mere enlargement of the pipe.

Mr. Butterworth—At Detroit last winter the works were supplied with gas by an open way, and we had all kinds of trouble therewith until it reached a point where it was exposed to the air. If we could treat all of our gas in this or some similar way, it would be a good thing. We could have something like an overground system of pipes, connected to the holder outlet, so that when the cold weather comes we could shunt our gas off, instead of piping it directly into the distributing mains.

No. 24. "What has been found the most profitable method of advertising for extending the uses of gas?"

Mr. Butterworth—Newspaper advertising.

Mr. Frost—Large circulation.

Mr. Butterworth—There is no question about the value of newspaper advertising, so far as I am concerned.

No. 25. "Should not the Michigan Gas Association publish a catalogue showing the appliances for using gas which are kept and sold by most gas companies, and give in same the advantages of using gas for the different purposes for which these appliances are sold? These catalogues to be sold to the different companies in the State at cost, and to be distributed to the consumer through the company's solicitors. This is something which a gas company needs and which is too expensive for any one company to get up."

Mr. Shacklette—I would like to say that the Denver Gas Company has a very complete and excellent catalogue.

Mr. Douglas—I can see a great advantage of a catalogue of that kind, and I think it would fill quite a want in our Association. It would not be necessary to advertise any one make of apparatus, we could advertise different makes.

Mr. Butterworth—I do not want to talk too often, but I wish to say I think this is a good scheme. But a catalogue, such as has been suggested, would be very voluminous. No one man would be interested in $\frac{1}{16}$ of it, and to provide the gas companies with a catalogue to go to all consumers would be a very foolish thing. The catalogue that the Denver Company issues we have used in Detroit and Grand Rapids by getting and keeping a number of copies. We keep 20 copies in Grand Rapids. We get loose leaf copies and distribute them where we think they will do the most good. We keep copies on hand to impress a man of the various uses to which gas can be put. We leave these catalogues with a man and go back in a few days for them, but to provide catalogues to hand out to people would be too expensive and unnecessary.

Mr. Dewey—Along the line that Mr. Butterworth speaks, I would say as to the text book, "yes;" but as a means of advertising, "no." We have a thousand stored up in Detroit. Th y are too expensive to give out, and to begin with are too large for the ordinary man. Our method as outlined now would be to possibly get out a smaller circular, or else get them out for the different appliances and special devices. For instance, if a manufacturer wrote to the different appliance men who got out catalogues on the apparatus that is best adapted to his work—for the machine shops, the barbers, and so on—it would be less expensive and I think more efficient. The first think in getting out such a catalogue would be careful discrimination in cataloguing and arranging the different appliances. For instance, an appliance might be of use if properly handled and used by the right person. I know there are a lot of things advertised as proper for a certain industry that do not meet the demand of that industry; and after all, when it comes down to the question of selling, it depends almost entirely upon your solicitor, his mechanical and technical ability to judge whether not a certain appliance would be a success in each individual case. I think what we want most is a higher grade of solicitors. The ordinary solicitors we have at the present are absolutely valueless. We must get a higher grade of men for this line of our busidess.

Mr. Chamberlain—I should think in getting up a catalogue of this kind for an Association like ours, it would be a hard thing to tell just what appliances to list. Take for instance the water heaters. I suppose there are 15 or 20 pretty fair water heaters, and if the committee would pick out one at a good price, and another at possibly half the price of that one, it might be that neither would be the one at all, so it would be a hard proposition to tell which to illustrate in that catalogue.

Mr. Frazer—Most of the gentlemen who have spoken to this question seem to have the idea that it applies to industrial appliances. You notice it says "appliances for using gas which are kept and sold by most gas companies." Most gas companies do not keep appliances for selling industrial gas. It refers to appliances which most gas companies keep, such as gas ranges, water heaters, etc.

Mr. Wolff—I think almost any company represented in this Association could afford to get out a catalogue of the stoves and ranges it has for sale. In Jackson, I think, there has not been a year we have not done so. We have been using catalogues something like 8 or 9 years.

Mr. Frazer—I think your catalogue shows stoves and ranges only, yet there are 15 or 20 appliances for using gas that you use in your stoves, such as waffle irons, pancake griddles, etc.

Mr. Wolff—Not all of the appliances are shown.

Mr. Lloyd—It occurs to me in connection with this matter that each gas company has to dig up its own trade among the competitive solicitors, even to find out whether a woman wants a waffle iron and get her to buy it. There is a class, I might call wrinkles, inasmuch as it has been applied for many purposes. I know a solicitor in a certain town who consulted a quack doctor and found that he was curing rheumatism with gas. This solicitor told the other doctors about it and got them all to using gas for curing rheumatism. Now we might just as well sell gas for curing rheumatism as for anything else; so, it seems to me if the various companies represented here would have some member appointed by this Association to investigate these wrinkles for unusual uses of gas, the Association to publish these unusual uses, it might assist a great many of us, if managed along the same line as the wrinkle scheme has been applied by many.

Mr. Butterworth—At Denver we made a great effort to get, as you suggest, all the uses for which gas can be put, and we canvassed the country, but we have never heard of curing rheumatism with it. The last two numbers of the "Progress Report" that I have received contained a "complete" list of all the uses to which gas has been put, and there you will find over 100 instances specified.

No. 26. "Is it possible the gas companies of Michigan can so concentrate their efforts as to better the present condition of the tar market?"

Mr. Butterworth—In talking this matter over on the way down on the train, I expressed the opinion, and still have it, that the only way I can see is by co-operating to better the conditions of the tar market. I think each of us should talk over the uses for which tar can be put to the city officials in our communities. In Ohio we tried to form a scheme in which the people of the State would join us in the tar industry; but these things cannot be carried out until our city officials act more in unison with those who locally could spread the use of tar for paving, roofing, etc.

Mr. Ewing—I would like to say a word respecting tar for pavements and fillings in Michigan. I think to-day most of the engineers are recommending cement filler rather than pitch filler, and this has made a great difference in the pitch market, depriving the pitch manufacturer of many sources of outlet for his product. Tar for pavements is a matter in which we can all be interested, and to considerable benefit, by getting it into the cities.

Mr. Lloyd—If the buyers could be induced to dispense with the cement filler, it would help out the pitch market and incidentally help the tar market.

No. 28. "Should the tar extractor precede or follow the exhauster? Why?"

Mr. Steinwedell—The P. & A. should follow the exhauster; first, because the light tar is very desirable as a lubricant; second, because the P. & A. operates better under compression than under suction. Whether the P. & A. can be dispensed with by using a washbox is a hard question to answer.

Mr. Lloyd—I doubt if that question can ever be settled to the satisfaction of everybody. I think the general practice is to place the extractor subsequent to the exhauster rather than before it, for the reason that it depends for its gas supply upon the water seals, and in such apparatus the seals might be broken in the event of working the apparatus on suction.

No. 30. "What kind of clay is best to be used for filling on top of benches? Is it advisable to use clay mixed with sand?"

Mr. Dewey—In Detroit we use a mixture of clay and sand.

Mr. Russell—What is meant by sand; ordinary sand or fire?

Mr. Lloyd—The question does not say.

Mr. Russell—I should say fire sand mixed with clay.

Mr. Lloyd—It is probably intended to be used in pavement on top of the arch.

No. 31. "How can back pressure from purifying boxes be guarded against—using Crutchfield's iron oxide?"

Mr. Russell—My experience with it shows it is no worse than any other oxide in this respect.

No. 32. "How best to remove water from tar (presumably water gas tar).

Mr. Lynn—A paper read before the Western Association covers it.

Mr. Dewey—An article in the American Gas Light Journal, by Mr. Mann, of Cleveland, published about 1½ years ago, is a complete answer to that question.

Mr. Steinwedell—That is to be found in the proceedings of the Western Gas Association.

No. 33. "How can ammonia salt best be dissolved in the storage tank?"

Mr. Steinwedell—If steam is applied properly you won't have any waste.

No. 34. "On firing benches with tar: (a), What is the best form of burner to use, and where should it be located? (b), What is the value of 1 gallon of tar in pounds of coke? (c), What is the value of 1 gallon of tar in pounds of coal?"

Mr. H Russell—I have had considerable experience in the west with tar burning, mostly under boilers. Where it was used in connection with benches, the best results were obtained by building an outside chamber, extending 4 feet, say in front of the bench proper. The tar burner is introduced at that point, making an outside chamber for it to play into at a point considerably above the furnace and about on a level with the secondary air ports. Regarding the use of burners, I have seen a great many tried. One that worked very successfully was simply a piece of 1¼-inch pipe about 18 inches or 2 feet in length, and inside of that was a piece of ¼-inch pipe about 1 foot long, the tar going in the outside of the large pipe and the steam through the small pipe. On

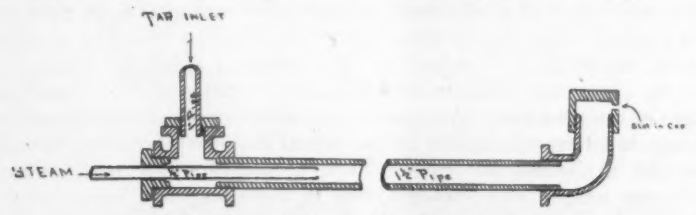


Fig. 1.—Steam Injector Coal Tar Burner for Bo lers.

the end of the 1¼-inch pipe was put an ordinary street elbow and on the end of the elbow screw of cap, and in this cap cut a slot extending about half-way around the circumference. You can regulate the size of the slot; that is, the opening to suit the quality of the tar you may have. Heavy tar requires a larger opening, lighter tar a smaller one.

Mr. Barthold—In 1898 we burned 500 barrels of coal tar. We had a home-made burner for the coal tar, and a patented one for the water gas tar. We placed coke at $3.25 per ton. We got a little over 3 1/10 cents per gallon for coal tar in 7 benches. We went over these figures a little while ago, and would not say for certain, but it decreases the life of the bench about one-half or one-third, taking which into consideration brought the value down to about 2.8 cents per gallon, and netted us on the oil tar better than 2 cents per gallon. The oil tar does not burn the bench down as quickly as coal tar. We thought these were good results, but it required a good deal of attention to look after the tar burners.

No. 35. "What is the ratio of cost of bench repairs per 1,000 in free-firing, half-depth and full-depth benches?"

Mr. Traver—Our records show that the cost of maintaining and renewing our half-depth benches is about $242 a year each, while the cost of maintaining and renewing our plain setting benches is about $200 a year each.

No. 37. "Is a jet photometer reliable as an indicator of candle power?"

General Opinion—No.

No. 38. "In a specimen from a Portland cement concrete construction that had failed, how could it be determined whether or not the failure was due wholly or in part to inferior mixing?"

Mr. H. Russell—I think defective mixing could be determined by microscopic examination of the concrete.

Prof. Campbell agreed to this opinion.

No. 39. "Are there any developments tending toward the prevention of the accumulation of moisture on the glass of show windows?"

Mr. R. B. Brown, of the Milwaukee Gas Light Company, reported that his Company is introducing with great success ventilated gas arcs for lighting show windows. The Company is now using the regular inside arc lamp with inverted by-pass. The products of combustion are carried off by means of a simple 6-inch, galvanized iron conductor pipe, fitting tightly over the top of the lamp and extending upward and outward into the open air in whatever manner or direction the construction of the window or of the building may require. The lamp is turned off and on by means of chains extending over pulleys if necessary into the storeroom itself. The lamp can if desired be placed so close to the ceiling as not to hang down in the window in an unsightly or inconvenient position, and trouble from frost and moisture is entirely obviated.

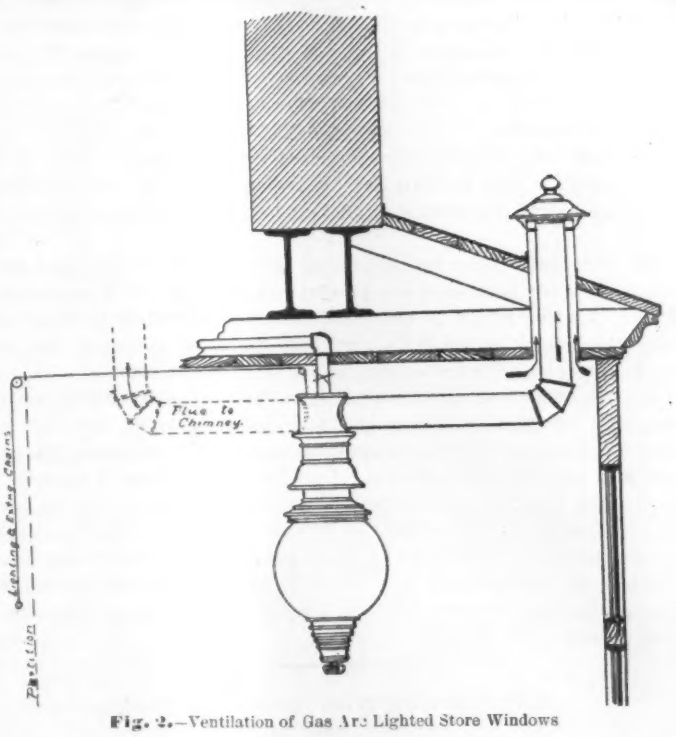


Fig. 2.—Ventilation of Gas Arc Lighted Store Windows

No. 40. "Is it necessary to use shelves in setting meters? Our company has never used shelves and has almost no complaints from leaks in meter connections?"

Mr. Wolff—We have used shelves for a great many years and are still using them. I do not understand why the questioner's company does not get any leaks. We have a good class of gasfitters, better than the average.

Mr. Butterworth—In Grand Rapids we do not have shelves, except for the larger meters. We tried to get Mr. Hellen to explain why it was necessary to use shelves for the large meters and not necessary to have them for the small meters. It seems to me if they are necessary for the large ones they are also for the small ones. He thinks having shelves under the larger meters makes the placing safer.

Mr. Dewey—I should say off-hand it would probably depend on the meter connections. If you should use a very light one it might be necessary to use shelving, but under ordinary conditions it is not necessary as the meter is very light, and is usually set in such a place that the danger of running into it would be small. We are experiencing considerable difficulty at the present time from leaks in meter connections that are broken, but think it is due entirely to meters set a year or so ago, as the meter connections were very light.

Mr. Lynn—We use shelves. I think they afford good protection and the investment is money well spent. In soldering the meter connections, you sometimes do not make as good a joint as could be made. You are in a hurry to get the meter set and may overlook it and not get the solder down in. One accident from the explosion of a meter will cover practically all the expense of the shelving put in a town. We always use shelves.

No. 41. "Is the gas garbage crematory a success?"

Mr. Butterworth—I have installed a few in Grand Rapids, but as they have only been in use a short time we have had no evidence of any value. We set 4 and have had one complaint.

No. 42. "What paint or coating is considered most economical and lasting for covering iron surfaces?"

Mr. Lynn—We buy no paints. We use our own product, although we have neighbors in Detroit who make a very excellent production in that line. In our place we subject the coal tar to enough heat to expel the water, which makes it very thick, then we cut it back with a little benzene or naphtha so as to make it spread easily.

Mr. Douglas—I think tar paint is improved by adding a little water gas tar.

No. 43. "Why do not prepayment meters take in this country as well as they do in England?"

Mr. Lynn—I do not see why they should not take in every respect in this country as well as in England. We are installing them on every occasion. In one plant in particular in the West we had quite a boom in town 2 or 3 years ago and got quite a lot of consumers, but business

got dull and we had to take in a good many meters for non-payment of bills. Our superintendent in the last year put back about 300 more prepayment meters for them; we collected most of the back bills, which averaged about $1.10. We set the meters at 2,000 cubic feet, telling the consumers we were doing so in order that back payments could be partially made up. We do not ask for a deposit any more. If a person fails to pay his bills we take out his meter. Some of our consumers' payments are 30 per cent. greater than when they were paying by the month.

Mr. Shacklette—We are collecting bills in the same way in Adrian. One reason we take them out is that we have so much trouble with them. Another reason is the consumption of the meter is 25 per cent. less, which may be due to the fact that there are so few in the large establishments. We have them placed in only one hotel.

Mr. Lathrop—Some are not much in their favor from the fact that the slight experience we have had with them has shown them not to be very satisfactory. We tried to put in quite a number of them a few years ago, and had very poor success In other places where I have been I tried them, but have proved them of insufficient value to warrant covering the expense. This rather discouraged me. In St. Paul we cannot get any results out of them; in Minneapolis about 6,000 of them are in use, and the Secretary of the Company I remember was pleased with the results, but I cannot tell why they should not be as successful in this country as in Europe.

Controversies Over Customs Duties.

Iron Age reports that an interesting controversy between the appraiser and the collector of the port of Philadelphia, in which the importers are supported by the appraiser, is now before General Appraiser Fischer for adjudication. The importers are R. D. Wood & Co., of Philadelphia, and the merchandise is checkered plates, which are used for flooring in boiler rooms and similar places. The testimony shows that the plates are first rolled in the regular way, and then, while still hot, rolled again with a checkered roll, which produces the checker that gives the plates their character. When the goods arrived in this country the appraiser assessed them at 4-tenths of 1 cent a pound under the provisions of paragraph 135 for steel plates in all forms and shapes valued between 1 and $1\frac{4}{10}$ cents a pound. The collector, however, classified them as boiler plates under paragraph 126 at 6-tenths of 1 cent a pound, and the entry was liquidated on this basis. It is against this decision of the collector that the importers are appealing.

The Board of United States General Appraisers on October 28, in a decision written by General Appraiser Fischer, overruled the protest filed in the name of F. Behrend, of New York, against the classification of thermit as a manufacture of metal at 45 per cent. Mr. Fischer decides that the claim of the importer that it was dutiable as a nonenumerated manufactured article at 20 per cent. is without foundation, and at the same time he decides against the later classification by the customs authorities of the material as a chemical compound at 25 per cent. Mr. Fischer in his decision says: "The testimony of Dr. Hans Goldschmidt, the inventor and manufacturer of thermit, shows that it is a mechanical mixture consisting of 4 parts of powdered aluminum and 1 part of powdered oxide of iron; that the aluminum metal is purchased by him in lump form, and the oxide of iron in the form in which it comes from rolling mills as a by-product; that he reduces the aluminum and oxide of iron to powder, and then mixes them together by hand in the proportions already stated, and that the aluminum is the component material of chief value. There is no resultant chemical change from the mixing—the aluminum still is a metal and the oxide of iron is unchanged. We are of the opinion that the assessment of duty at the rate of 45 per cent. was correct. The article is composed wholly or in part of aluminum, and it falls precisely within the terms of paragraph 193." This classification will, however, have no effect on the price of thermit, as Dr. Goldschmidt has already established a plant in New York for its manufacture.

Mr. Fischer is also the author of a decision handed down October 29 overruling a protest by W. N. Proctor & Co., of Boston, against the classification at 45 per cent., as manufacturers of metal, of sheets of steel known as black taggers. These sheets were claimed by the importers to be dutiable at $1\frac{5}{10}$ of 1 cent per pound under the provisions of paragraph 131 for sheets of common or black iron or steel valued at less than 3 cents a pound. The testimony showed that the material was valued at more than 3 cents a pound, and it was thus excluded from the provisions of paragraph 131.

Another decision by Mr. Fischer, handed down the same day, overruled a protest by W. C. Townsend, of Boston, against the classification of iron grit or sand at 45 per cent. as manufacturers of metal. The importer claimed that it was dutiable at 6-tenths of 1 cent a pound under the provision for steel in all forms and shapes not specially provided for.

Mr. Fischer sustains a claim by Lembcke & Co., of New York, for classification as spikes at 1 cent a pound of screw spikes, designed to permit the use of soft wood railroad ties. They had been assessed at 4 cents a pound under the provision for "wood screws."

A Type of Promoters to be Avoided.

Iron Age says that a type of promoter of new corporations, lawyer or otherwise, who makes it his business to hunt up men who are about to start a new business or who have a small established business, and this promoter is the subject of a good deal of complaint from those who have listened to his counsel and have followed it. A great many instances of over-capitalization are the result. The promoter has as a motive the fee for attending to the business of incorporation, and the contingent hope that he will be able to dispose of some of the stock of the corporation at a handsome percentage of commission, in cash, not in the stock itself, for he knows better than anyone else how little the stock issued on such a basis as he proposes is worth in dollars and cents. A recent instance illustrates the working of the corporation idea of this promoter. An inventor of much practical and successful mechanical experience, but limited actual business experience, planned to start a business for himself, to manufacture a new machine tool. He was sought by a promoter, who in some way had learned of the proposed venture. It had been the idea of the inventor to start on a small scale, with a few thousand dollars capital, all the money he could command. The promoter laughed at the idea. "Make it at least $100,000. Don't think of going under that," he said. "Now, how much will your machine cost to manufacture?" The inventor told him about $150, or perhaps somewhat less if built in lots of ten or a dozen. "Ten or a dozen," exclaimed his advisor. "I mean what will they cost manufactured in 100 lots; no, in 500 lots?"

The inventor knew his machine to be one that did special work only and comparatively few shops would need more than 1 such tool, and many shops would find it cheaper to get along without it. But the promoter overcame his views and persuaded him to capitalize for $100,000, at a greater expense, of course, than if he had placed his capital stock at its real figure or had not incorporated at all, which would probably have been just as well. The promoter got his fee and failed to sell any of the stock. So the inventor had an authorized capital stock of $100,000 and an actual capital of $3,000. He has succeeded, however, in building up the nucleus of a profitable business and doubtless will in time find himself in a position to command $100,000 of cash capital. But in the meantime he will reduce his authorized capital to something about $10,000. It is good advice to the man who proposes to incorporate a business, new or old, to seek out a reputable attorney to do the legal work for him and to make his authorized capital pretty nearly the actual cash value of his business. It means that when a report of his financial business is requested from the credit agencies the statement will not include the usual pessimistic allusion to the actual issue of stock as compared with the corporation figure published to the world, or the actual value of the business if all the stock has been issued.

ITEMS OF INTEREST FROM VARIOUS LOCALITIES.

THE following communication was forwarded some time ago to the Board of Gas and Electric Light Commissioners by Mayor Collins of Boston, seeking to obtain a reduction of at least 10 cents per 1,000 feet of gas for the city and 20 cents for other consumers:

"The undersigned, the Mayor of the city of Boston, a city in which the Boston Gas Light Company, the Brookline Gas Light Company, the Dorchester Gas Light Company, the Jamaica Plain Gas Light Company, the South Boston Gas Light Company, the Roxbury Gas Light Company, the Bay State Gas Company, of Massachusetts, and the Massachusetts Pipe Line Gas Company, said companies being now owned and operated by the Massachusetts Gas Companies, so-called, are located, complains that the price of gas to the public is maintained at the price fixed more than 12 years ago, although certain circulars of Kidder, Peabody & Co., soliciting subscriptions to stock of said Massachusetts Gas Companies, and the annual report of the Board of Trustees of the Massachusetts gas companies for the year ending June 30, 1904, copies of which are hereto annexed, coupled with the reports made to your Board of the number of cubic feet of gas sold to con-

sumers by said companies during the years covered by said reports, show that the profits made by said companies on each 1,000 cubic feet of gas sold are larger than they should be in a city of the density of population of Boston.

"The undersigned would therefore petition your Board to order said gas light companies to reduce the price of gas to the city of Boston 10 cents per 1,000 cubic feet and to all other customers 20 cents per 1,000 cubic feet, or make such other and further reduction as your Board may deem just, so that a reasonable price for gas may be established in Boston practically contemperaneously with the fixing of the capitalization of the Consolidated Company, to the end that consumers of gas and persons intending to invest in the securities of the Massachusetts gas companies trust may be apprised of the price which the Boston Consolidated Gas Company is to charge for gas."

MESSRS. WM. F. FREEMAN, James H. McKenna, Thos. G. Philpot and R. H. McLaws, of Chatham county, Ga., have filed articles incorporating the Savannah Pipe and Foundry Company. The initial capital is put at $10,000. According to article fourth the purposes of the concern are "to make, manufacture and sell sewer, gas, water and all other kinds of pipe, to make, manufacture and sell castings from iron and other metals, to buy and sell iron and other metals and such other material as may be necessary or advisable in connection with its business, and generally do and perform all such acts and things usual, necessary or advisable in connection with a general pipe and foundry business." The first period of corporate life is put at 20 years.

FOR the quarter ended September 30th last the payment to the city authorities of Philadelphia on franchise account for gas sold by the United Gas Improvement Co. in Philadelphia amounted to $138,784.

THE payment on similar account for the corresponding quarter of 1903 was $131,429.

THE San Francisco Coke and Gas Company it is said will attempt to compete with the San Francisco Gas and Electric Company in the supply of gas to the residents of San Francisco. The officers of the corporation are: President, Leopold Michel; Secretary, Charles G. Lyman; Chief Engineer, J. C. Stutt; Superintendent, Alfred Vanderwhite. The capitalization of the concern is put at $5,000,000.

THE proprietors of the Rome (N. Y.) Gas, Electric Light and Power Company announce that the main extensions heretofore agreed upon and arranged for have been satisfactorily completed.

THE Water and Light Board, of Duluth, Minn., has agreed with Manager Case that the gas plant should be overhauled, particularly the main system, which Manager Case proved to the Board could be extended profitably to several outlying districts the aggregate population thereof being at least 12,000.

THE annual report of the Managers of the Consumers Gas Company of Toronto, Ont., to the shareholders who assembled in annual meeting about a fortnight ago, showed that the output for the year amounted to 1,232,961,000 cubic feet, an increase of 106,434,000 cubic feet over the previous year, bringing an increase of revenue, at 80 cents per 1,000, of $85,147.20. That all this increased output, however, does not bring this rate is shown by the following comparative statement in the report:

	Street Lamps.	Meters.	Gas Rental.
Year ending Sept. 30, 1904....984		36,428	$905,858 63
Year ending Sept. 30, 1903....944		33,677	855,522.57
Showing an increase of.....	40	2,751	50,336.06

During the year 2,629 new services were put in, and 8½ miles of new mains were laid, making a total mileage of 287. A new 24-inch trunk main is being laid from the Bathurst street gasholder to Bloor street, to give an increased supply of gas to the northwestern portion of the city. Contracts have been let for the erection of a new gasholder with a capacity of 3,000,000 cubic feet, and for an overhead coke storage and coke measuring plant, by which it is expected a large saving in the handling of coke will be effected. Other improvements already made are a new machine shop and storage house, larger boilers and exhausters, the remodelling and enlargement of the boiler house, and a larger chimney. "These and other renewals and alterations," says the report, "have largely increased the amount chargeable against the plant and buildings' renewal fund." A large lot has been purchased on Eastern avenue, on which to construct an additional set of works. The result of the vote empowering the city to purchase gas stock is not referred to in the report. The balance sheet shows the capital stock on October 1st to have been $1,998,600. The reserve fund on October 1st, 1903, was $846,315.75. To this is added $191,113.39 premium on stock and profit and loss on the year's operations, $67,557.22, making a total of $1,104,986.36. Deducting $153,684.33 spent on plant and buildings' renewal fund there is left $951,302.03 to be added to the liabilities. The plant and buildings' renewal fund on October 1st, 1903, was $441,686.53, and after deducting repairs and renewals for the year, $171,115.76, there is still $270,570.77. Added to this is $153,684.32 transferred from reserve fund, being 5 per cent. on value of plant and buildings in use September 30th, 1904. Other liabilities are: Reserved for dividend No. 218, $49,931.20; Dominion Bank, $366,701.85, and sundry accounts payable, $69,416.65, a total of $3,860,206.83. The assets, which also are given at $3,860,206.83, include the following large amounts: Works—plant and general outlay —$3,530,394.55; gas accounts receivable, $153,416.16; debentures, $98,122.37, and sundry accounts receivable, $17,793.24.

THE affairs of the Goshen (N. Y.) Gas and Fuel Company are now being operated by Messrs. Benjamin J. MacDonald and Graham Witschief, both of Newburg, N. Y., under an order from Justice Dickey, of the Supreme Court. Mr. MacDonald is well known to the gas industry of the State, and he holds quite an important financial interest in the Goshen Company.

THE National Gas and Construction Company, of Camden, N. J., has announced a cut in its capital stock. It was $1,000,000; it is now $2,000. Quite a slash.

THE new benchwork on the plant at Pine Bluff, Ark., will enable the Company to send out 135,000 cubic feet per day. The construction is under the direction of the Laclede Firebrick Manufacturing Company, of St. Louis.

A PROJECT is on foot for the construction of a gas plant at Clayton, N. J.

THE Light Committee of Richmond (Va.) City Councils has sanctioned the report awarding to the Stacey Manufacturing Company, of Cincinnati, the contract for the construction of the new storage holder for the city gas plant.

THE transfer of the plant and rights of the Flint (Mich.) Gas Light Company to the Flint Gas Company, is announced. The officers of the succeeding corporation are: President, C. Hamilton, of Grand Rapids; Vice-President, J. C. Wilson, of Flint; Secretary, B. C. Robinson, of Ypsilanti. The capital stock of the Company is $300,000.

AT the annual meeting of the Consumers Gas Company, of Toronto, Ont., the Directors elected were: A. W. Austin, J. L. Blaikie, Henry Cawthra, George R. R. Cockburn, M.A., George Gooderham, Dr. F. Le M. Grasett, James Henderson, M.A., D.C.L., Thos. Long, E. B. Osler, Andrew Smith, F.R.C.V.S., L. W. Smith, K.C., D.C.L., Thomas R. Wood. At a subsequent meeting of the Board of Directors Dr. Larratt W. Smith was re-elected President and Mr. George R. R. Cockburn, Vice-President. Dr. Garrett is a new Director, replacing Mr. A. J. Somerville. Mr. Cockburn, in the course of a short address, said: "The Company will welcome loyally the Mayor of Toronto as a member of its directorate. I hazard the prediction, although I am not a prophet, that from now on the Company will be left to carry on the business of manufacturing and selling gas, instead of being compelled to waste a great deal of time and money, as has been the case in the past, in fighting lawsuits. When the Mayor has been with us a few months he will find that we are not a bad set of fellows, after all, and not rogues, as sometimes supposed. I can state positively that the Company is manufacturing cheaper gas than any other gas concern in North America, and also more gas than any other in proportion to its capital."

IT is again reported that negotiations are underway looking to the purchase of the properties of the American Light and Traction Company by the U. G. I. Company.

THE following proposition recently submitted to the authorities of Wilmington, Del., by the Otto Gas Company explains itself:

"To the Board of Directors of the Street and Sewer Department, Wilmington, Del.—Gentlemen: The Otto Gas Company, a corporation organized and existing under the laws of the State of Delaware, hereby respectfully request your Board to pass the accompanying resolution, for the purpose of enabling said Company to supply light and power to the citizens of Wilmington, under the terms and conditions therein contained. The resolution provides for the laying and maintaining of conduits, rails, ducts, pipes and electric wires, together with the erection of poles and the stringing of wires thereon throughout the streets, alleys and public places of Wilmington.

"Attached to the resolution are the affidavits of the parties who have posted notices setting forth this application, more than 30 days prior to the introduction of this resolution in five of the most public places in the streets and alleys of said city.

"The said Company agrees not to encumber any more of the streets and alleys of said city than shall be necessary to enable it to perform its work properly, and to give bond to restore said streets and alleys in the same condition as they were before said Company took possession thereof, and for the maintenance of the streets and alleys in similar good order and repair during a period of 2 years.

"Said Company further agrees to furnish gas to all customers at a cash price of 90 cents per 1,000 cubic feet and to provide and furnish the city of Wilmington, free of charge, a space equal to 1 cable capacity for wires owned and operated by the said city for the use of its fire and police departments, in all conduits and ducts which the said Otto Gas Company may lay.

"The resolution further provides that the city of Wilmington shall be indemnified and saved harmless from all actions, suits, claims, damages, cost and expense arising from delay, negligence or unskilfulness upon the part of the said corporation. By the adoption of the resolution the city of Wilmington will be amply protected from any loss or damage. Free space will be granted for the wires of the police and fire department, and the manufactories and citizens will be provided with an excellent quality of gas at a cash price of 90 cents per 1,000 cubic feet.

"Respectfully submitted, OTTO GAS CO.

"JOHN SALTER, JR., President."

THE AMERICAN GAS LIGHT JOURNAL

A. M. CALLENDER & CO.,
PROPRIETORS.

THOS. J. CUNNINGHAM,
ELBERT P. CALLENDER,
EDITORS.

CHAS. E. SANDERSON,
MANAGER.

PUBLISHED ON EACH MONDAY OF THE YEAR AT
No. 42 Pine Street, New York.
Telephone, 2996 John.

TERMS:
SUBSCRIPTION—Three Dollars per annum, in advance. Single copies, 10 Cents.

The JOURNAL is the official organ of the
NEW ENGLAND ASSOCIATION OF GAS ENGINEERS.
AMERICAN GAS LIGHT ASSOCIATION.
WESTERN GAS ASSOCIATION.
OHIO GAS LIGHT ASSOCIATION.

NOTIFICATION RESPECTING ADVERTISING.

Orders for new advertising, or for changes in standing advertisements, to insure attention in the issue following their reception, must be in hand any time of Wednesday.

AGENTS:
New York—American News Co., 39 and 41 Chambers St.
Germany—Lemcke & Buechner, of New York.
England—Aug. Siegle, 30 Lime Street, London.

MONDAY, NOVEMBER 14, 1904.

The Market for Gas Securities.

According to all reports the general financial situation hereafter is to be one of strength—continuous and prolonged. Mr. Roosevelt has been elected to the office of President; business men throughout the country have so willed it, and the rank and file are again marching on. We are to have four more years of prosperity. Let us hope so. Meanwhile Consolidated gas does not reflect any positive advance over the figures of last week; in fact they are about identical as compared with those of a week ago. A sign of the prosperity in store for the gas men of the State is likely shown in the success of Governor Odell and the defeat of Assemblyman Remsen.

Brooklyn Union is 217½ to 222, ex div. of 2½ per cent. Peoples, of Chicago, is well above the 110 mark; and Baltimore Consolidated is 82½ bid. We again strongly advise the purchase of Baltimore. It will not stop this side of par. Washington (D. C.) shows no change. The market for gas bonds is active, and there is much inquiry for certain issues of the Public Service Corporation of New Jersey.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

16 WALL STREET, NEW YORK CITY.

NOVEMBER 14.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share.

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked.*
Consolidated	$73,177,000	100	217	217¾
Central Union, Bonds, 5's.	3,000,000	1,000	106½	106½
Equitable Bonds, 6's	1,000,000	1,000	105	..
" 1st Con. 5's	2,300,000	1,000	118	120
Metropolitan	658,000	..	108	112
Mutual	3,500,000	100	270	300
Municipal Bonds	750,000	..	..	..
New Amsterdam Gas Co., Bonds, 5's	11,000,000	1,000	108¼	108¾
New York & Richmond Gas Co. (Staten Island)	1,500,000	100	35	..
1st Mtg. Gold Bds. 5 p. ct.	1,000,000	..	..	..
Northern Union, Bonds, 5's.	1,250,000	1,000	104½	106½
New York and East River..				
Bonds 1st 5's	3,500,000	1,000	111	113
" 1st Con. 5's	1,500,000	..	106	108
Standard	5,000,000	100	125	130
Preferred	5,000,000	100	145	155
Bonds, 1st Mortgage, 5's	1,500,000	1,000	116	117
Yonkers	299,650	500	130	..
Out-of-Town Companies.				
Brooklyn Union	15,000,000	100	217½	222x
" " Bonds (5's)	15 000,000	1,000	113	115
Bay State	50,000,000	50	—	—
" Income Bonds	2,000,000	1,000	..	75
Binghamton Gas Works	450,000	100	28	30
" 1st Mtg. 5's	509,000	1,000	93	96
Boston United Gas Co.—				
1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	4	4¼
" " Bonds, 5's	5,250,000	1,000	19¾	.
Capital, Sacramento	500,000	50	..	35
Bonds (6's)	150,000	1,000	..	..
Chicago Gas Co. Guaranteed Gold Bonds	7,650,000	1,000	104	104¼
Cincinnati Gas and Electric Co	20,500,000	100	10	108½
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	97½	99
Columbus (O.) Gas Lt. & Heating Co	1,682,700	100	88¾	89¼
Preferred	3,026,500	100	107½	109
Consumers, Toronto	2,000,000	50	200	204
Consolidated, Baltimore	11,000,000	100	82½	83½
Mortgage, 6's	3,600,000	..	..	118
Chesapeake, 1st 6's	1,000,000	..	..	..
Equitable, 1st 6's	910,000	..	..	..
Consolidated, 1st 5's	1,490 000	..	..	112
Consolidated Gas Co. of N. J.	1,000,000	100	15	17
" Con. Mtg. 5's	880,000	1,000	89½	90
Consolidated G. & E. Co.'s.				
Little Falls, N. Y.	90,000	100	..	100
Bonds	75,000	..	..	100
Detroit City Gas Co.	4,825,500	50	..	50
" Prior Lien 5's	5,603,000	1,000	99½	100
Detroit Gas Co., 5's	351,000	1,000	75	75¼
" Inc. 5's	16,000	100	98½	100
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	..	101
Essex and Hudson Gas Co.	6,500,000	..	39	40
Fort Wayne	2,000,000	..	..	..
" Bonds	2,000,000	..	85	..
Grand Rapids Gas Lt. Co. 1st Mtg. 5's	1,225,000	1,000	104½	105
Hartford	750,000	25	190	200
Hudson County Gas Co., of New Jersey	10,500,000	..	88	92
" Bonds, 5's	10,500,000	..	105¼	106
Indianapolis	2,000,000	..	65	68
" Bonds, 6's	2,650,000	..	107	109
Jackson Gas Co.	250,000	50	82	..
" 1st Mtg. 5's	290,000	1,000	101	102½
Kansas City Gas Light Co., of Missouri	5,000,000	100	..	36
Bonds, 1st 5's	3,822,000	1,000	102	104
Laclede, St. Louis	10,000,000	100	..	..
Preferred	2,500,000	100	80	100
Bonds	10,000,000	1,000	109½	110
Lafayette Gas Co., Ind.	1,000,000	100	..	60
Bonds	1,000,000	1,000	60	65
Louisville	2,570,000	50	130	140
Madison Gas & Elec. Co.				
" 1st Mtg. 6's	350,000	1,000	107½	108½
" 6 per cent. scrip, due 1910	100,000	25	85	87
Montreal, Canada	2,000,000	100	218	218¾
Nashville Gas Lt. Co.	1,000,000	100	110	..
Newark, N. J., Con. Gas Co.	6,000,000	..	56	58
Bonds, 6's	4,600,000	..	105	105¾
New Haven	2,000,000	25	200	..
Peoples G. L. & Coke Co., of Chicago	25,000,000	100	110¾	110¾
Peoples Gas Lt. & Coke Co., Chicago, 1st Mortgage	20,100,000	1,000	..	..
2d "	2,500,000	1,000	104	
Rochester Gas & Elec. Co.	2,150,000	50	88	..
Preferred	2,150,000	50	116	..
Consolidated 5's	2,000,000	..	87½	90
San Francisco, Cal.	15,800,000	100	58½	58¾
St. Joseph Gas Co.				
" 1st Mtg. 5's	751,000	1,000	94	96
St. Paul Gas Light Co.	1,500,000	100	45	47
1st Mortgage 6's	650,000	1,000	113	116
Extension, 6's	600,000	1,000	112½	115
General Mortgage, 5's	2,465,000	1,000	92	93
Syracuse, N. Y.	1,975,000	100	46	48
Bonds	2,047 000	1,000	94	96
Washington, D. C	2,600,000	20	296½	298¾
First mortgage 6's	600,000	..	..	..
Western, Milwaukee	4,000,000	..	..	..
Wilmington, Del.	600,000	50	200	..

Advertisers' Index.

GAS ENGINEERS. Page

A. E. Boardman, New York City ... 792
Baxter & Young, Detroit, Mich ... 792
B. E. Chollar, St. Louis, Mo ... 778
David Leavitt Hough, New York City ... 792
Economical Gas Apparatus Construct'n Co., Toronto, Ont. 784
Frank D. Moses, Trenton, N. J ... 776
Fred. Bredel Co., Milwaukee, Wis ... 780
Frederic Egner, Washington, D. C ... 778
Geo. G. Ramsdell, New York City ... 777
Geo. R. Rowland, New York City ... 784
Humphreys & Glasgow, New York City ... 793
Isbell-Porter Co., Newark, N. J ... 794
J. Alex. Mayers, New York City ... 795
J. F. W. Jost, Philadelphia, Pa ... 781
Kerr Murray Mfg. Co., Fort Wayne, Ind ... 792
The Gas Machinery Co., Cleveland, O ... 780
The Jeffrey Manufacturing Co., Columbus, O ... 790
The Western Gas Construction Co., Fort Wayne, Ind ... 800
United Gas Improvement Co., Philadelphia, Pa ... 787

GAS WORKS APPARATUS AND CONSTRUCTION.

A. E. Boardman, New York City ... 792
Bartlett, Hayward & Co., Baltimore, Md ... 793
Baxter & Young, Detroit, Mich ... 792
Connelly Iron Sponge and Governor Co., New York City 789
Continental Iron Works, Brooklyn, N. Y ... 794
Cruse-Kemper Co., Philadelphia, Pa ... 789
Davis and Farnum Mfg. Co., Waltham, Mass ... 792
Deily & Fowler, Philadelphia, Pa ... 796
Economical Gas Apparatus Construct'n Co., Toronto, Ont. 784
Frank D. Moses, Trenton, N. J ... 776
Fred. Bredel Co., Milwaukee, Wis ... 780
G. Shepard Page's Sons, New York City ... 792
Humphreys & Glasgow, New York City ... 792
Isbell-Porter Company, New York City ... 794
J. Alex. Mayers, New York City ... 795
Kerr Murray Mfg. Co., Fort Wayne, Ind ... 792
Lloyd Construction Co., Detroit, Mich ... 792
Logan Iron Works, Brooklyn, N. Y ... 793
Quintard Iron Works, New York City ... 793
R. D. Wood & Co., Philadelphia, Pa ... 794
Riter-Conley Mfg. Co., Pittsburg, Pa ... 795
Stacey Mfg. Co., Cincinnati, O ... 795
The Connersville Blower Company, Connersville, Ind ... 797
The Gas Machinery Co., Cleveland, O ... 780
The Jeffrey Manufacturing Co., Columbus, O ... 790
The Western Gas Construction Co., Fort Wayne, Ind ... 800
United Gas Improvement Co., Philadelphia, Pa ... 787

PROCESSES.

Bartlett, Hayward & Co., Baltimore, Md ... 793
B. E. Chollar, St. Louis, Mo ... 778
Economical Gas Apparatus Construct'n Co, Toronto, Ont. 784
Fred. Bredel Co., Milwaukee, Wis ... 780
Humphreys & Glasgow, New York City ... 793
The Gas Machinery Co., Cleveland, O ... 780
The Western Gas Construction Co., Fort Wayne, Ind ... 800
United Gas Improvement Co., Philadelphia, Pa ... 787

SCRUBBERS AND CONDENSERS.

Continental Iron Works, Brooklyn, N. Y ... 794
Economical Gas Apparatus Construct'n Co., Toronto, Ont. 784
Fred. Bredel Co., Milwaukee, Wis ... 780
Isbell-Porter Co., Newark, N. J ... 794
Kerr Murray Mfg. Co., Fort Wayne, Ind ... 792
Logan Iron Works, Brooklyn, N. Y ... 796
R. D. Wood & Co., Philadelphia, Pa ... 794
Riter-Conley Mfg. Co., Pittsburg, Pa ... 795
Stacey Mfg. Co., Cincinnati, O ... 795
The Gas Machinery Co., Cleveland, O ... 780
The Western Gas Construction Co., Fort Wayne, Ind ... 800

PRODUCER POWER PLANTS.

Economical Gas Apparatus Construct'n Co., Toronto, Ont. 784
R. D. Wood & Co., Philadelphia, Pa ... 794

TAR AND CARBONIC ACID EXTRACTOR.

Economical Gas Apparatus Construct'n Co., Toronto, Ont. 784
Fred. Bredel Co., Milwaukee, Wis ... 780
Isbell-Porter Co., Newark, N. J ... 794
Stacey Mfg. Co., Cincinnati, O ... 795
The Gas Machinery Co., Cleveland, O ... 780
The Western Gas Construction Co., Fort Wayne, Ind ... 800

AMMONIA CONCENTRATORS.

Fred. Bredel Co., Milwaukee, Wis ... 780
Michigan Ammonia Works, Detroit, Mich ... 775
The Gas Machinery Co., Cleveland, O ... 780
The Western Gas Construction Co., Fort Wayne, Ind ... 800

GAS METERS.

American Meter Co., New York and Philadelphia ... 799
Detroit Meter Company, Detroit, Mich ... 799
D. McDonald & Co., Albany, N. Y ... 797
Helme & McIlhenny, Philadelphia, Pa ... 799
John J. Griffin & Co., Philadelphia, Pa ... 780
Keystone Meter Co., Royersford, Pa ... 798
Maryland Meter and Mfg. Co., Baltimore, Md ... 798
Metric Metal Co., Erie, Pa ... 799
Nathaniel Tufts Meter Co., Boston, Mass ... 798

PREPAYMENT METERS.

American Meter Co., New York and Philadelphia..... 799
D. McDonald & Co., Albany, N. Y..... 797
Helme & McIlhenny, Philadelphia, Pa..... 799
John J. Griffin & Co., Philadelphia, Pa..... 760
Keystone Meter Co., Boyersford, Pa..... 798
Nathaniel Tufts Meter Co., Boston, Mass..... 798

PREPAYMENT METER ATTACHMENTS.

Reeves Mfg. Co., New Haven, Conn..... 776

GAS AND WATER PIPES.

Central Foundry Co., New York City..... 784
Charles Millar & Son Co., Utica, N. Y..... 784
Davis & Farnum Mfg. Co., Waltham, Mass..... 792
Donaldson Iron Co., Emaus, Pa..... 784
Economical Gas Apparatus Construct'n Co., Toronto, Ont. 784
R. D. Wood & Co., Philadelphia, Pa..... 794
Warren Foundry and Machine Co., New York City..... 784

HYDRAULIC MOTORS.

American Hydraulic Motor Co., New York City..... 783

GAS COALS.

Berwind-White Coal Mining Co., New York and Phila. 790
Perkins & Co., New York City..... 790
Westmoreland Coal Co., Philadelphia, Pa..... 791

SPECIALTIES FOR OIL AND PIPE LINES.

S. R. Dresser, Bradford, Pa..... 781

GAS MAIN STOPPERS.

Safety Gas Main Stopper Co., N.Y. City..... 784

MAIN AND SERVICE LAYING.

Sullivan Bros., Flushing, N. Y..... 790

GAS TAPPING MACHINES.

George Light, Dayton, O..... 784
H. Mueller Manufacturing Company, Decatur, Ills..... 782

CANNEL COALS.

Perkins & Co., New York City..... 790

STOKING MACHINERY.

G. A. Bronder, New York City..... 789

CONVEYORS.

Adam Weber Sons, New York City..... 788
C. W. Hunt Company, New York City..... 780
Economical Gas Apparatus Construct'n Co., Toronto, Ont. 784
Fred. Bredel Co., Milwaukee, Wis..... 780
G. A. Bronder, New York City..... 789
Kerr Murray Mfg. Co., Fort Wayne, Ind..... 792
The Brown Hoisting Machinery Co., Cleveland, O..... 791
The Gas Machinery Co., Cleveland, O..... 780
The Jeffrey Manufacturing Co., Columbus, O..... 790
The Link-Belt Engineering Co., Philadelphia, Pa..... 781
The Link-Belt Machinery Co., Chicago, Ills..... 784
The Western Gas Construction Co., Fort Wayne, Ind... 800

CHARGING BARROWS & COAL WAGONS.

Kerr Murray Mfg. Co., Fort Wayne, Ind..... 792
Stacey Mfg. Co., Cincinnati, O..... 795

GAS ENRICHERS.

Standard Oil Co., New York City..... 791
Sun Company, Pittsburg, Pa..... 791
The Sun Oil Co., Pittsburg, Pa..... 791

COKE CRUSHERS.

C. M. Keller, Columbus, Ind..... 791
Fred. Bredel Co., Milwaukee, Wis..... 780
The Jeffrey Manufacturing Co., Columbus, O..... 790

STEAM BLOWER FOR BURNING BREEZE.

The Connersville Blower Company, Connersville, Ind.. 797

ECONOMIZERS.

Green Fuel Economizer Co., Matteawan, N.Y..... 796

GAS GAUGES.

The Bristol Co., Waterbury, Conn..... 789

GAS GOVERNORS.

Connelly Iron Sponge and Governor Co., New York City 789
Fred. Bredel Co., Milwaukee, Wis..... 780
Isbell-Porter Co., Newark, N. J..... 794
R. D. Wood & Co., Philadelphia, Pa..... 794

CEMENTS.

C. L. Gerould, Bloomington, Ind..... 788

RETORTS AND FIREBRICKS.

Adam Weber Sons, New York City..... 788
Baltimore Retort and Firebrick Co., Baltimore, Md..... 788
Brooklyn Firebrick Works, Brooklyn, N. Y..... 788
Harbison-Walker Refractories Co., Pittsburg, Pa..... 778
Henry Maurer & Son, New York City..... 788
James Gardner, Jr., Co., Pittsburg, Pa..... 788
J. H. Gautier & Co., Jersey City, N. J..... 788
Laclede Firebrick Mfg. Co., St. Louis, Mo..... 788
Missouri Firebrick Co., St. Louis, Mo..... 788
Parker-Russell Mining and Mfg. Co., St. Louis, Mo..... 778
The Kreischer Brick Mfg. Co., New York City..... 788

INCLINED RETORTS.

Adam Weber Sons (Graham, Morton [England] System) 788
Fred. Bredel Co., Milwaukee, Wis..... 790
Geo. G. Ramsdell, New York City..... 777
Parker-Russell Mining and Mfg. Co., St. Louis, Mo..... 778

VERTICAL S'S.

Adam Weber Sons (Oscar B. Weber's Construction)..... 788
Connelly Iron Sponge & Gov. Co. (Drake's [Eng.] System) 789
Fred. Bredel Co., Milwaukee, Wis..... 780
Parker-Russell Mining and Mfg. Co., St. Louis, Mo..... 778

VERTICAL RETORTS, CHARGING AND DISCHARGING VERTICALLY.

Adam Weber Sons, New York City..... 788

REGENERATIVE FURNACES.

Adam Weber Sons, New York City..... 788
Bartlett, Hayward & Co., Baltimore, Md..... 793
Fred. Bredel Co., Milwaukee, Wis..... 780
J. H. Gautier & Co., Jersey City, N. J..... 788
Laclede Firebrick Mfg. Co., St. Louis, Mo..... 788
Missouri Firebrick Co., St. Louis, Mo..... 788
Parker-Russell Mining and Mfg. Co., St. Louis, Mo..... 778

SELF-SEALING MOUTHPIECE DOORS.

Continental Iron Works, Brooklyn, N.Y. 794
Fred. Bredel Co., Milwaukee, Wis..... 780
Isbell-Porter Co., Newark, N. J..... 794
Kerr Murray Mfg. Co., Fort Wayne, Ind..... 792
Logan Iron Works, Brooklyn, N.Y..... 796
R. D. Wood & Co., Philadelphia, Pa..... 794
Stacey Mfg. Co., Cincinnati, O..... 795
The Gas Machinery Co., Cleveland, O..... 780
The Western Gas Construction Co., Fort Wayne, Ind... 800

CHIMNEY CONSTRUCTION.

Adam Weber Sons, New York City..... 788

INCANDESCENT GAS LAMPS.

Central Lighting Co., New York City..... 776
D. M. Steward Mfg. Co., Chattanooga, Tenn..... 781
General Gas Light Co., Kalamazoo, Mich..... 779
Geo. G. Ramsdell, New York City..... 777
Knickerbocker Light and Heat Co., New York City..... 787
Welsbach Company, Gloucester, N. J..... 786

BURNERS.

Central Lighting Co., New York City..... 776
D. M. Steward Mfg. Co., Chattanooga, Tenn..... 781
Wm. M. Crane Co., New York City..... 781

LAVA GAS TIPS.

D. M. Steward Mfg. Co., Chattanooga, Tenn..... 781

STREET LAMPS.

Thos. T. W. Miner, New York City..... 780
Welsbach Street Lighting Co., New York and Phila..... 786

GAS FLASH SIGNS.

Qui-Vive Co., Grand Rapids, Mich..... 781

PURIFIERS.

Connelly Iron Sponge and Governor Co., New York City. 789
Fred. Bredel Co., Milwaukee, Wis..... 780
Isbell-Porter Co., Newark, N. J..... 794
Kerr Murray Mfg. Co., Fort Wayne, Ind..... 792
R. D. Wood & Co., Philadelphia, Pa..... 794
Stacey Mfg. Co., Cincinnati, O..... 795
The Western Gas Construction Co., Fort Wayne, Ind... 800

PURIFYING MATERIALS.

Connelly Iron Sponge and Governor Co., New York City 789

VALVES.

Continental Iron Works, Brooklyn, N. Y..... 794
Economical Gas Apparatus Construct'n Co., Toronto, Ont. 784
Isbell-Porter Co., Newark, N. J..... 794
Kerr Murray Mfg. Co., Fort Wayne, Ind..... 792
Ludlow Valve Manufacturing Co., Troy, N.Y..... 781
R. D. Wood & Co., Philadelphia, Pa..... 794
Stacey Mfg. Co., Cincinnati, O..... 795
The P. H. & F. M. Roots Co., Connersville, Ind..... 783
The Western Gas Construction Co., Fort Wayne, Ind.... 800

EXHAUSTERS.

Connelly Iron Sponge and Governor Co., New York City 789
Isbell-Porter Company, Newark, N. J..... 794
Kerr Murray Mfg. Co., Fort Wayne, Ind..... 792
The Connersville Blower Company, Connersville, Ind... 797
The P. H. & F. M. Roots Co., Connersville, Ind..... 783

PURIFIER SCREENS.

John Cabot, Hoboken, N. J..... 780

GRATE BARS.

F. Ferguson & Son, Hoboken, N. J..... 784

GAS STOVES.

American Meter Co., New York and Philadelphia..... 799
Detroit Stove Works, Detroit and Chicago..... 798
Keystone Meter Co., Boyersford, Pa..... 798
Maryland Meter and Manufacturing Co., Baltimore, Md. 798
Nathaniel Tufts Meter Co., Boston, Mass..... 798

HOT WATER HEATERS.

Humphrey Co., Kalamazoo, Mich..... 780

GASHOLDER TANKS.

J. P. Whittier, Brooklyn, N.Y..... 788

GASHOLDERS.

Bartlett, Hayward & Co., Baltimore, Md..... 793
Continental Iron Works, Brooklyn, N.Y..... 794
Cruse-Kemper Co., Philadelphia, Pa..... 789
Davis & Farnum Mfg Co., Waltham, Mass..... 792
Deily & Fowler, Philadelphia, Pa..... 796
Economical Gas Apparatus Construct'n Co., Toronto, Ont. 784
Kerr Murray Mfg. Co., Fort Wayne, Ind..... 792
Logan Iron Works, Brooklyn, N.Y..... 796
R. D. Wood & Co., Philadelphia, Pa..... 794
Riter-Conley Mfg. Co., Pittsburg, Pa..... 795
Stacey Mfg. Co., Cincinnati, O..... 795

STORAGE TANKS.

Stacey Mfg. Co., Cincinnati, O..... 795

PAINTS.

National Paint Works, New York City..... 792

PATENTS, TRADE-MARKS, COPYRIGHTS.

Royal E. Burnham, Washington, D. C..... 780

BOOKS, ETC.

Scientific Books..... 779
Newbigging's Handbook for Gas Engineers & Managers. 776
Self-Instruction for Students in Gas Manufacture..... 790
Electric Gas Lighting..... 790
Coal Tar and Ammonia..... 790
Field's Analysis, 1903..... 781
Directory of Gas Companies..... 795
Gas Engineer's Laboratory Handbook..... 794
Poole on Fuels..... 791
Practical Photometry..... 784
Binders..... 791

POSITION WANTED

As Manager or Superintendent,

By a man who has had 15 years' experience in the management of a gas and electric plant, is thoroughly acquainted with all details of the business, and can show results. Can furnish references. Address, "FLINT."

1534-5 Care this Journal.

Position Wanted.

Does your business need a doctor? A young man, 31 years of age, who has been in the gas and electric business since he was 15, would like position as superintendent of gas plant in a city of 15,000 to 25,000 inhabitants. Would prefer one all run down and keen competition, or a new one which wants to develop new business.

1536-1 Address, "R. E. L. C.," care this Journal.

Position Wanted.

An expert accountant, who has had considerable experience as manager in the distributing and commercial departments of one of the largest gas corporations in the country, offers his services to some progressive company where ability will be recognized and promotion made upon the base of merit. Under such conditions he would be willing to accept a subordinate position at a moderate salary and depend upon his close application and attention to business for advancement. He can give satisfactory reasons for leaving his old company, and the best of references from its president as to his ability and energy as a gas man.

1535-3 Address, "AMBITION," care this Journal.

WANTED,

Superintendent for Gas and Electric Light Plants

In town of about 12,000 in Ohio. Must be familiar with, and be able to push, gas for power. Apply, stating salary, references, etc., to "H.,"

15 tc-2 Care this Journal.

Utilize Your Gas Liquor.

NO EXTRA LABOR OR OPERATING EXPENSES.

IMPROVED AMMONIA CONCENTRATOR.

About 100 in use. Write to

STROH & OSIUS, Patentees, or

MICHIGAN AMMONIA WORKS. - Detroit, Mich.

Practical Handbook on

GAS ENGINES,

With Instructions for Care and Working of the Same,

By G. LIECKFELD, C.E.

Translated with Permission of the Author,

By GEO. M. RICHMOND, M.E.

Price, $1. For Sale by

A. M. CALLENDER & CO.,

No. 42 Pine Street, New York City.

The "Air-Light"

Premier Burner Of America.

GENUINE "AIR-LIGHTS,"

A NEW BURNER FOR 1905.

AGENTS WANTED EVERYWHERE.

Increased in Value. Decreased in Price.

DENAYROUZE TRADE MARK AIR-LIGHT REGISTERED PAT. 673,705 MAY 7 1901

A High-Class Burner, a Rapid Seller, and a Money Maker for Agents, Dealers, Gas Companies, etc.

CENTRAL LIGHTING CO., 86 Warren Street, New York, N. Y.

Write or Call for Prices and Particulars.

FRANK D. MOSES,

Telephone, 204-A TRENTON, N. J., Telephone, 204-A

Constructing Engineer and Contractor.

Estimates Furnished on any kind of Work in Connection with Gas or Water Plants.

SPECIAL ATTENTION GIVEN TO THE REMODELLING AND EXTENDING OF THE PROPERTIES OF WORKS NOT UP-TO-DATE.

CORRESPONDENCE SOLICITED.

OLD METERS CONVERTED INTO UP-TO-DATE SLOT METERS by using THE REEVES PREPAYMENT ATTACHMENT.

EASY TO ATTACH TO OLD OR NEW METERS.

The Reeves device is the acme of perfection in slot attachments. Long warning to consumers. Simple. Durable. Cannot be "beaten." Gives *exact* amount for quarter at any price gas. Handsomely finished. Low price.

REEVES MFG. CO., - - - - - New Haven, Conn.

THE SEVENTH EDITION, ILLUSTRATED,

— OF THE —

Handbook for Gas Engineers and Managers,

By THOMAS NEWBIGGING, M. INST. C.E.

This Edition of the "Handbook for Gas Engineers and Managers" is a great improvement on all previous editions. Much of the text has been re-written, in order to keep the work abreast of the constant advances that are being made in the Gas Industry.

PRICE, · $6.50.

A. M. CALLENDER & CO., 42 Pine Street, New York City.

THE GAS MAN'S INNING.

We have something to say to you, Mr. Gas Manufacturer, which has a vital bearing on *your* business, and we have contracted for this space twice a month so that we can tell you our story in installments which won't take up much of your time.

We know well enough that it would be hoping against hope to expect you to act promptly upon our first suggestion, even though prompt action would mean thousands of dollars profit to your company.

You are looking for people who will burn gas.

We are looking for people who will buy an article that will burn gas.

We are looking for the same people. Why not help each other find them?

It won't take long to see our point if you look at it in the light of our

NEW INVERTED INCANDESCENT GAS LAMP.

It marks the beginning of a new era in gas consumption.

You know well enough what the introduction of electricity for lighting did to your business.

And you know the principal reasons why it did it. There were just two of them—convenience and decorative possibilities.

You had the matter of economy to put up against these, but economy didn't count with the extravagant users of gas, who were, of course, your most profitable patrons.

But now you have it within your power to turn the tables on the fellows who have been having their inning for the past few years.

The Inverted Incandescent Gas Lamp now offers you the whip hand!

It embodies practically every convenience of the electric system of lighting.

It duplicates and even excels every decorative possibility of the electric light.

And the cost per candle power is from one-eighth to one-tenth the cost of electricity.

What more can you ask to place yourself in a position to regain your lost patronage?

This lamp can be attached to any fixture, old or new. Being inverted, it throws all the light downward, where it belongs, and throws the shadows to the ceiling. The large lamp consumes 2½ to 3 feet of gas per hour, while the small light consumes only 1 foot per hour, in either case giving over 20 candles of light per cubic foot of gas consumed.

You see now the business lever we are offering, and why we ask so confidently that you give these little talks of ours your attentive consideration.

We can only treat the subject in an introductory way in this first page; but we have prepared a complete price list, which will give more detailed information right away if you will write us your name and address.

We will also gladly supply any special information you may want. In fact, there is nothing we would rather do than to give you a few confidential inside pointers about ways you can cooperate with us to the increasing glory of your own bank account.

Possibly you have seen our exhibit at the fair. If you haven't, you certainly missed one of the most attractive features of the big show—for the gas manufacturer.

An exhibit in your own offices or show rooms would be just as interesting to *your* patrons. But that's one of the things we want to talk about confidentially any time you are ready.

Don't forget about that price list.

GEO. G. RAMSDELL,

Agent for United States and Canada,

The New Inverted Incandescent Gas Lamp Co., Inc.,

530 Broadway, New York.

PARKER-RUSSELL MINING AND MFG. CO.,

OF ST. LOUIS, MO.,

PROPRIETORS OF THE

OAK HILL GAS RETORT AND FIREBRICK WORKS.

ST. LOUIS OFFICE: 417 Pine Street. NEW YORK OFFICE: Aldrich Court, 45 Broadway.

WE MAKE A SPECIALTY OF WATER GAS LININGS AND CHECKER BRICK.

Half and Full Depth Benches of Our Own Design, Containing 6, 8 or 9 Retorts.

SLOPERS.--We have perfected plans of INCLINED RETORT BENCHES, designed to meet conditions prevailing in America, and constructed entirely of American materials.

We Build Benches Complete. Ready for Gas Making. Also,

RETORT HOUSES,

COAL and COKE CONVEYING MACHINERY.

Plans, Specifications and Estimates Cheerfully Furnished.

CORRESPONDENCE SOLICITED.

ALL CONTRACTS MADE AS OF ST. LOUIS, MO.

FREDERIC EGNER,

Gas Engineer,

NORFOLK, VA.,

May be consulted with reference to estimates of cost for new, or appraising actual value of existing works; utility of proposed or patented processes; relative earning power to capitalization, and management.

Chollar's System of Gas Purification.

THE PURIFIED GAS REVIVES THE FOULED OXIDE.

HARBISON-WALKER REFRACTORIES COMPANY,

Farmers Bank Building, Pittsburg, Pa.

REPRESENTING

HARBISON-WALKER CO.
PHILIPSBURG FIREBRICK CO.
CLEARFIELD FIREBRICK CO.
BASIC BRICK COMPANY,
CLINTON COUNTY F. B. CO.
FREDERICKS MUNRO CO.
WALLACETON FIREBRICK CO.

MANUFACTURERS OF

HIGH GRADE FIREBRICK

For Gas Plant Construction,

Chrome, Magnesia, and Silica Brick,

Ground Fireclay, Silica Cement, Dead Burned Magnesia and Chrome Ore.

We Carry in stock constantly at our various works a complete line of shapes in the following well-known brands:

BENEZET.
WOODLAND,
H. & W. SPECIAL,
CLEARFIELD,
WIGTON STEEL,
WALLACE,
MUNRO
EUREKA,
TYRONE,
"W. F. B."
CORNING.
CLINTON

For use in every line of work in which refractory Material is required.

Catalogues will be furnished upon application. - - - Correspondence and trial orders solicited.

(In writing, kindly mention this Journal.)

A Beautiful Pair.

HUMPHREY FANCY ARCS.

Ornamental Arc.

THE only distinctly new design of Gas Arc produced since the original Humphrey gave its powerful impetus to Commercial Gas Lighting and inaugurated a new business era. Our new lamps broaden the field.

GENERAL GAS LIGHT CO.,

Factory: KALAMAZOO, MICH.

NEW YORK. SAN FRANCISCO. LONDON. BREMEN.

Residence Lamp.

SCIENTIFIC BOOKS.

ELECTRIC GAS LIGHTING. By H. S. Norrie. 50 cents.

GAS ANALYST'S MANUAL. By J. Abady. $6.50.

COX'S GAS FLOW COMPUTER. $2.50.

FIELD'S ANALYSIS, 1903. $5.

GAS AND GAS WORKS. By Hughes and O'Connor. $2.

POOLE ON FUELS. By Herman Poole. $3.

GAS ENGINEER'S POCKET-BOOK. By Henry O'Connor $3.50.

TECHNICAL GAS ANALYSIS. By Winkler & Lunge. $4.

GAS CONSUMER'S HANDYBOOK, by Wm. Richards. 20 cents.

PRACTICAL TREATISE ON HEAT. By Thomas Box. 2d edition. $5.

PRACTICAL PHOTOMETRY: A Guide to the Study of the Measurement of Light. By W. J. Dibdin. $3.

CHEMICAL TECHNOLOGY: Vol. I., *Fuel and Its Applications*, $5. Vol. II., *Lighting*, $4.

IRONWORK: Practical Designing of Structural Ironwork. By H. Adams. $3.50.

HEMPEL'S GAS ANALYSIS, $2.25.

SELF-INSTRUCTION FOR STUDENTS IN GAS MANUFACTURE. $1.25.

LIQUID FUEL FOR MECHANICAL AND INDUSTRIAL PURPOSES. By E. A. Brayley Hodgetts. $2.50.

PRACTICAL HANDBOOK ON GAS ENGINES, by G. Lieckfeld. $1.

HEAT A MODE OF MOTION. By John Tyndall. $2.50.

THEORY OF HEAT. By J. Clerk-Maxwell. $1.50.

MANUAL FOR GAS ENGINEERING STUDENTS. By D. Lee. 40 cents.

AMMONIA AND AMMONIUM COMPOUNDS. By Dr. R. Arnold. $2.

A TREATISE ON THE COMPARATIVE COMMERCIAL VALUES OF GAS COALS AND CANNELS. By D. A. Graham. $3.

A TEXT BOOK OF INORGANIC CHEMISTRY. By Prof. Victor Von Richter. $2.

ILLUMINATING AND HEATING GAS. By W. Burns. $1.50

HANDBOOK FOR MECHANICAL ENGINEERS. By H. Adams. $2.50.

TREATISE ON MASONRY CONSTRUCTION. Baker. $5.

GAS ENGINEER'S LABORATORY HANDBOOK. By Jno. Hornby. $2.50.

FINANCES OF GAS AND ELECTRICITY MANUFACTURING ENTERPRISES. By Wm. D. Marks. $1.

PRACTICAL PLUMBING. By P. J. Davies. Vol. I. $3, Vol. II. $4.50.

AMERICAN PLUMBING. By Alfred Revill. $2.

A COMPARISON BETWEEN THE ENGLISH AND FRENCH METHODS OF ASCERTAINING THE ILLUMINATING POWER OF COAL GAS. $1.60.

ELECTRICITY.

INDUSTRIAL PHOTOMETRY, with Special Application of Electric Lighting. By A. Palaz, Sc.D. $4.

ELEMENTS OF ELECTRIC LIGHTING, Including Electric Generation, Measurement, Storage and Distribution. By Philip Atkinson. $1.50.

ELECTRIC TRANSMISSION OF ENERGY. By G. Kapp. $3.50.

ELECTRICIAN'S POCKET-BOOK. By Monroe and Jamieson. $2.50.

DYNAMO BUILDING. By F. W. Walker. 50 cents.

DOMESTIC ELECTRICITY FOR AMATEURS. By E. Hospitalier. $2.50.

PRACTICAL MANAGEMENT OF DYNAMOS AND MOTORS. $1.

PRACTICAL GUIDE TO THE TESTING OF INSULATED WIRES AND CABLES. $1.

ELECTRIC LIGHTING, by Francis B. Crocker. $3.

ELECTRIC LIGHT FITTING. $2.

PRACTICAL ELECTRICITY. $2.50.

ELECTRICITY FOR ENGINEERS. $2.50.

ELECTRICITY, Its Theory, Sources and Applications. By John T. Sprague. $6.

The above will be forwarded upon receipt of price. If sent by mail or express, postage or express charges must be added to above prices. We take especial pains in securing and forwarding any other Works that may be desired, upon receipt of order. All remittances should be made by check, draft, or post office money order. No books sent C.O.D.

A. M. CALLENDER & CO., 42 PINE ST., NEW YORK.

P. PLANTINGA PRES. THE W.E. STEINWEDELL SEC.

GAS MACHINERY

— CO., —

MAIN OFFICE AND SHOPS

CLEVELAND, O.

N.Y. OFFICE 44 BROAD ST

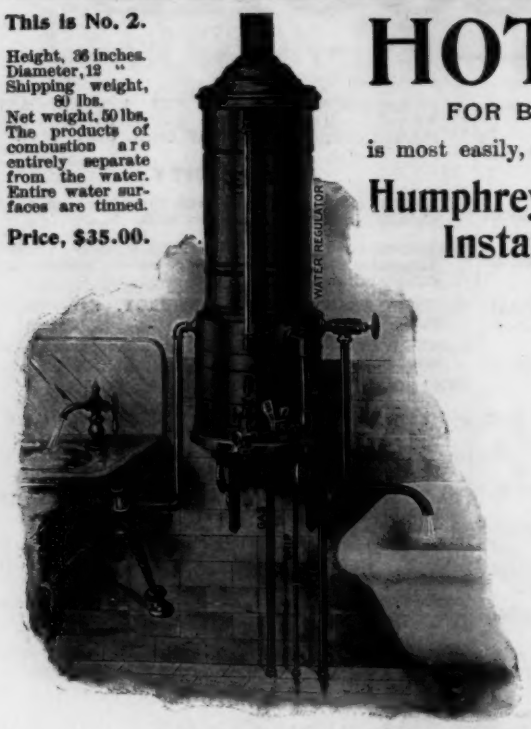
J.A. MAYERS
REPRESENTATIVE

COAL & WATER GAS
APPARATUS,
PURIFIERS, VALVES,
CONNECTIONS,
ROTARY SCRUBBERS,
WASHERS,
BY PRODUCT MACHINERY,
COMPLETE GAS PLANTS.

This is No. 2.

Height, 36 inches.
Diameter, 12 "
Shipping weight, 80 lbs.
Net weight, 50 lbs.
The products of combustion are entirely separate from the water. Entire water surfaces are tinned.

Price, $35.00.



HOT WATER

FOR BATHROOM AND KITCHEN

is most easily, quickly and economically supplied by a

Humphrey Crescent Instantaneous Water Heater.

Prices range from $20 to $45.
Every Heater GUARANTEED.

Set a heater for every gas consumer. You will please them and increase sale of gas at the same time.

Send to-day for catalogue and discounts to

HUMPHREY CO.,

Kalamazoo, Mich.,

The only manufacturers in the World of a COMPLETE LINE OF INSTANTANEOUS WATER HEATERS.

PATENTS, TRADE MARKS, COPYRIGHTS.

ROYAL E. BURNHAM,

Solicitor of Patents and Counsellor in Patent Causes.

833 Bond Building, Washington, D. C

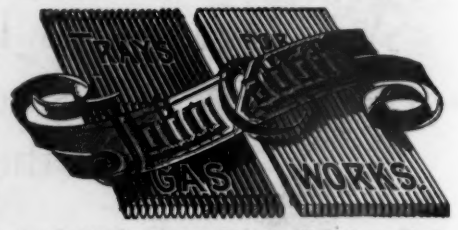
Send for Pamphlet on Patents.

1418-tf

Church's Patent Trays.

Reversible; Strongest; Most Easily Repaired.

Special Trays for Iron Sponge.



1412-1416 Adams Street, Hoboken, N. J.

We also Supply the Chapest and Strongest

•Reversible Bolted Trays•

IN THE MARKET.

SEND FOR BOOKLET AND CIRCULARS.

"THE MINER"

Globe Street and Boulevard Lamps.

Cheapest and Best

THOUSANDS IN USE WITH INCANDESCENT BURNERS.

Send for Catalogues.

THOMAS T. W. MINER,

821-823 Eagle Av., N.Y.

C. W. HUNT COMPANY
SOLE MANUFACTURERS
OF "INDUSTRIAL" RAILWAY.
CARS, TRACK, SWITCHES, TURNTABLES, ETC.
IN STOCK FOR IMMEDIATE SHIPMENT.
NEW YORK CITY.

Gas Analyses of All Sorts and Conditions,

—OR—

Analyses of Solid and Liquid Materials as Well,

That are needed by Gas Companies at any time in the conduct of their business, may be obtained from

DR. W. H. BIRCHMORE,

1421-tf 341 ADELPHI ST., BROOKLYN, N. Y.

FRED. BREDEL, President. WM. O. VILTER, Vice-President. O. W. GREENSLADE, Secretary and Treasurer.

FRED. BREDEL COMPANY,

ENGINEERS AND BUILDERS OF GAS PLANTS.

Inclined Benches, own system, Recuperative Furnaces, Exhausters, Exhauster Governors, Condensers, Washers, Coolers, Wet Purifying Plants, Purifiers, Oxide Elevators, Hydraulic and Dry Coke Conveyors.

Special High Grade Material for Recuperative Furnaces.

Licensees for ARROLL-FOULIS Charging and Discharging Machines and FRONHAUSER Coke Conveyors. **OFFICE, 405 KEENE ST., MILWAUKEE, WIS.**

BRAY BURNERS

Are Used Everywhere,

Because they are the best.
Reliable absolutely.
Accurately marked.
You can't find a city in the world,
with gas, not using them.

All Bray Burners are stamped with Name and Trade Mark.
Refuse Imitations. Send for Blue Book.

WILLIAM M. CRANE COMPANY,

1131 & 1133 Broadway, New York City.

THE

Ludlow Valve Mfg. Co.,

TROY, N. Y., U. S. A.

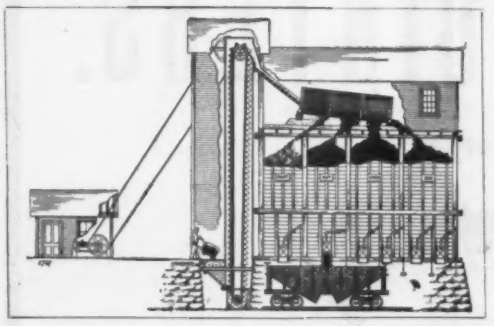
Double and Single Gate Valves, ¼" to 72"

—FOR—

Gas, Water, Steam, Oil, Ammonia, Etc.

HOT GAS VALVES A SPECIALTY.

Send for Catalogue.



Coke-Crushing and Screening Plant,

Erected in 1903 for Keystone Coal and Coke Co., Greensburg, Pa.

The machinery consists of 2-roll Crusher, 46' 6" centers Continuous Bucket Conveyor, and 4' 6" dia. x 18' long Revolving Screen. The coke pocket is 38' x 21' x 21' high, and is equipped with gates and chutes for chuting coke to cars.

Write for Link-Belt Coal-Handling literature.

LINK-BELT ENGINEERING COMPANY,
Philadelphia.

NEW YORK: 49 Dey St.
PITTSBURG: Park Bldg.
CHICAGO: Link-Belt Machinery Co.

FLASH SIGNS.

Yes; run by GAS!

THE QUI-VIVE CO.,
153 Canal St., Grand Rapids, Mich.

FIELD'S ANALYSIS FOR THE YEAR 1903.

An Analysis of the Principal Gas Undertakings in England, Scotland and Ireland. Being the 35th year of publication. Compiled and arranged by JOHN W. FIELD, Sec'y and Gen. Mgr. of The Gas Light and Coke Company, London. Price, $5. For Sale by

[illegible] ER & CO., 42 Pine St., New York City.

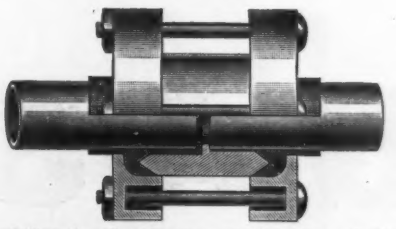
J. F. W. JOST,

CHEMICAL ENGINEER
—IN—
GAS MANUFACTURE,
P. O. BOX 2043, PHILADELPHIA, PA.

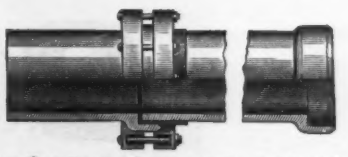
S. R. DRESSER,

BRADFORD, PENNSYLVANIA, U. S. A.,

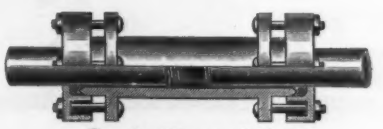
Patentee and Manufacturer of Specialties for Oil and Gas Lines.



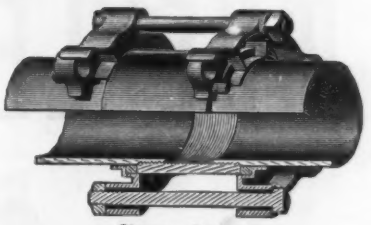
Insulating Coupling for Wrought Iron Pipe. Style 5.



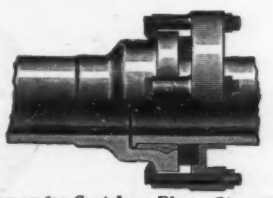
Insulating Coupling for Dresser Bell and Spigot Cast Iron Pipe. Style 6.



Regular Sleeve. Style 2.



Clamp. Style 4.



Clamps for Cast Iron Pipe. Style 4¼.

Pipe Couplings, Sleeves, Clamps, Crosses, Tees and Ells.

My Insulating Coupling prevents the destruction of pipe by electrolytic action, in either water or gas lines.

SEND FOR CATALOGUE.

ARE YOU MARRIED to any other burner?

If not, please give us an opportunity to get your orders. Tell us what your pressure is and we will send you samples which we know will please you. Steward Burners are made for 8-10, 12-10, 15-10, 20-10, 25-10 or 30-10 pressure, and in sizes from 2-foot to 8-foot.

D. M. STEWARD MFG. CO., Est. 1876, CHATTANOOGA, TENN.

LLOYD CONSTRUCTION COMPANY,
DETROIT, MICH.

GAS WORKS BUILDERS.

MUELLER PIPE JOINTERS.

CLOSED.

OPEN.

C—034.

In jointing pipe, much lost time and aggravation are often caused by having to search for a lost or misplaced jointer clamp.

The use of Mueller Pipe Jointers is not attended with these conditions. The clamp is hinged by a rivet at one end to one of the jointer ears, so that it cannot get lost or misplaced.

Mueller Pipe Jointers are made for all sizes of cast iron pipe from 2 to 48 inches. The illustrations show the jointer closed as upon the pipe and open as ready to put on.

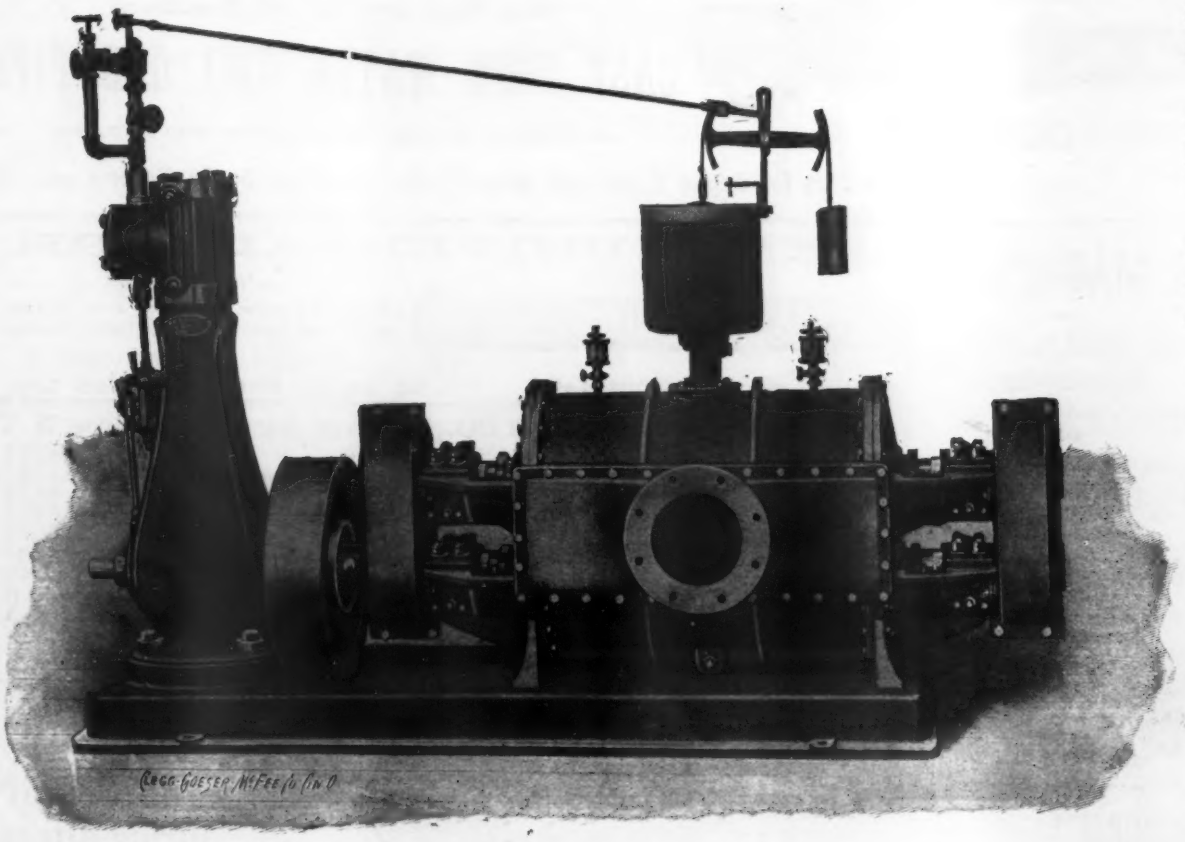
Each jointer is carefully inspected and assembled, is measured to actual pipe diameter, bears the Mueller trade mark, and is *unconditionally guaranteed.*

We also make tapping machines, gas cocks and meter connections for gas works' use.

Mueller Pipe Jointers are on exhibit in the Palace of Manufactures, World's Fair.

H. MUELLER MFG. CO., - DECATUR, ILL., U. S. A.

ROOTS' GAS EXHAUSTERS.



Sizes for any required capacity.

Self-oiling, adjustable bronze bearings.

Most perfect and sensitive Governor.

Write for Catalogue.

P. H. & F. M. ROOTS COMPANY,

HOME OFFICE:
Connersville, Ind.

NEW YORK OFFICE:
120-122 Liberty St.

CHICAGO OFFICE:
1547 Marquette Bldg.

NOTICE TO GAS COMPANIES.

If you have not already received our new rental proposition to gas companies on Compton Gas Boosters, write us and you will receive full particulars by return mail. We pay liberally for boosting your gas business.

AMERICAN HYDRAULIC MOTOR COMPANY,
116 NASSAU STREET, NEW YORK.

GEORGE ORMROD, Mangr. & Treas., Emaus, Pa.
JOHN DONALDSON, Prest., Betz Bldg., Phila., Pa.

EMAUS PIPE FOUNDRY.

DONALDSON IRON COMPANY. EMAUS, PA.

MANUFACTURERS OF

CAST IRON PIPE AND SPECIAL CASTINGS

FOR WATER AND GAS.

Also, FLANGE PIPE, LAMP POSTS, Etc.

GAS TAPPING MACHINES

—FOR—

Drilling and Tapping Pipe under Pressure

WITHOUT ANY ESCAPE OF GAS.

They are Strong and Compact.

Size of Combination Drills and Taps ¾ to 4-inch.

Machines Sent to any Gas Company for Thirty Days' Trial.

Send for Circulars.

Geo. Light,
DAYTON, O.

THE ECONOMICAL GAS APPARATUS CONSTRUCTION COMPANY, LIMITED,

Consulting Engineers.

Builders of UP-TO-DATE Machinery and Appliances for Coal and Water Gas Plants. :: :: :: :: ::

PLANS,
SPECIFICATIONS
AND ESTIMATES
PREPARED.

AMERICAN OFFICE:
269 Front St., East, Toronto, Canada.

GEORGE R. ROWLAND,

Formerly with the Continental Iron Works.

Draughtsman and Constructing Engineer.

Drawings, Specifications and Estimates furnished for the construction of new works or alteration of old works. Special attention given to Patent Office drawings.

Office, No. 245 Broadway, N. Y. City.

Practical Photometry,

By William Joseph Dibdin.

Price, - - - - $3.00.

FOR SALE BY

A. M. CALLENDER & CO.,

No. 42 Pine Street, New York City.

WARREN FOUNDRY AND MACHINE CO.,

Established 1856. Works at Phillipsburgh, N. J.

New York Office, 160 Broadway.

CAST IRON WATER AND GAS PIPE,

FROM THREE TO FORTY-EIGHT INCHES DIAMETER. ALSO, ALL SIZES OF

Flange Pipe for Sugar House and Mine Work. Branches, Bends, Retorts, etc., etc.

NO LEAKY JOINTS IN **UNIVERSAL PIPE.**

Specially adaptable for—
High and Low Pressure Gas Mains.
High and Low Pressure Water Mains.

WRITE FOR PRICES.

CENTRAL FOUNDRY COMPANY - - - 116 Nassau Street, New York City.

CHARLES MILLER & SON CO., Selling Agents, Utica, N.Y.

Flanged Pipe and Fittings, Hydrants, Gates, Pig Lead, Jute, etc.

UTICA PIPE FOUNDRY CO.

Manufacturers of Lead Pipe, Solder, etc., and Jobbers of Plumbers' and Tinners' Goods.

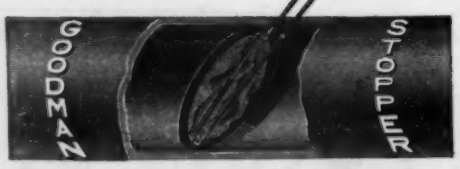
CAST IRON PIPE and SPECIALS FOR WATER AND GAS.

Wholesale Eastern Agents AKRON VITRIFIED SEWER PIPE.

SAFETY GAS MAIN STOPPER COMPANY,

For Shutting Off Gas in Mains Temporarily during alterations and repairs. : : : :

Any size gas main can be shut off in 30 seconds. : : :



STOPPERS SENT ON TRIAL.

Address: SAFETY GAS MAIN STOPPER CO., 108 E. 117th St., New York City.

FOX HILL FOUNDRY,

F. FERGUSON & SON,

HOBOKEN, N. J.

FINE OPENING

GRATE BARS

FOR GAS WORKS.

STATIONARY, SHAKING, DUMPING.

BARS FOR HAZELTON BOILERS.

BELT CONVEYORS

EQUIPPED WITH

BALL BEARING ROLLS

ARE THE BEST,

because they possess greater efficiency, consume less power, and the belts last longer than when any other type of roll is employed.

PLANS AND ESTIMATES FURNISHED ON REQUEST.

The Link-Belt Machinery Co.

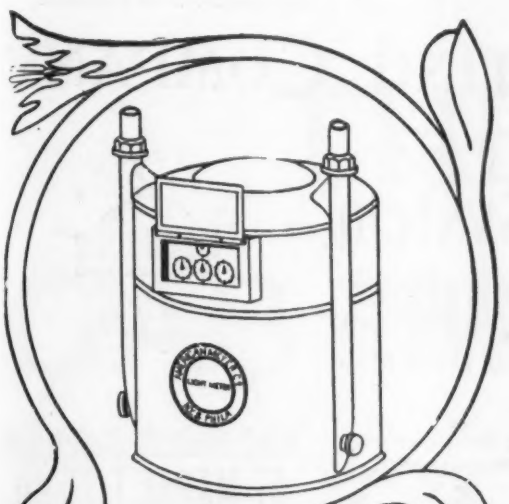
Link-Belt Engineering Co. Philadelphia Chicago. U.S.A.

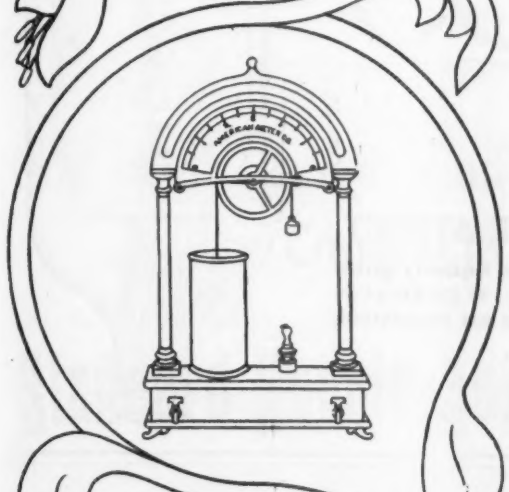
(Copyrighted, 1894, by the AMERICAN METER CO.)

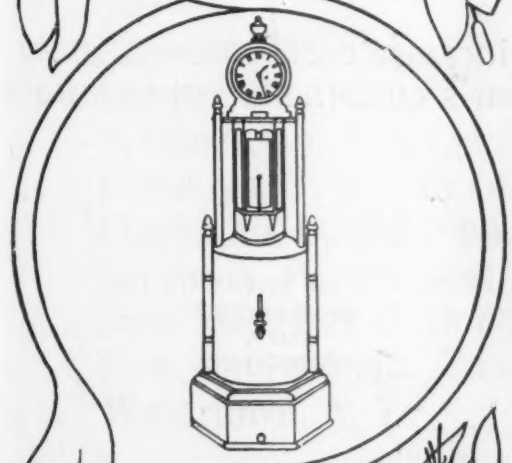
AMERICAN METER CO.

ESTABLISHED 1836. INCORPORATED 1863.

NEW YORK,
PHILADELPHIA,
CHICAGO,
ST. LOUIS,
SAN FRANCISCO.



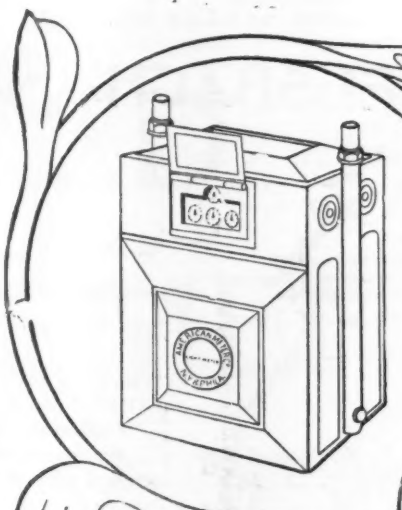


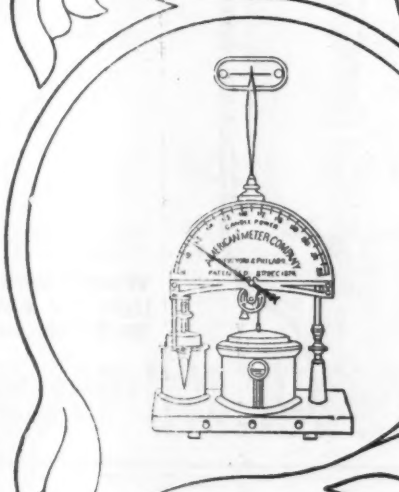


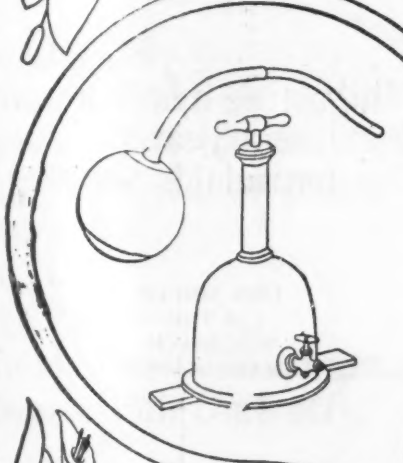
PUBLIC LIGHTING TABLE.

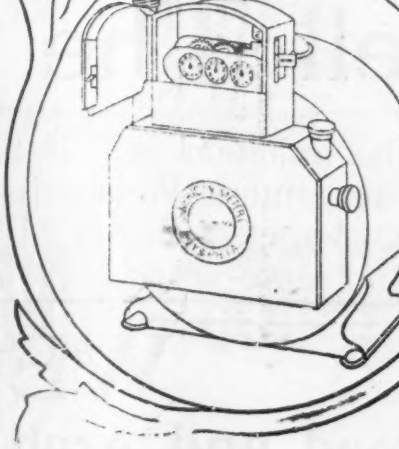
DECEMBER, 1904.

Day of Week.	Date.	Table No. 1. FOLLOWING THE MOON. Light.	Extinguish.	Table No. 2. NEW YORK CITY. ALL NIGHT LIGHTING. Light.	Extinguish.
				P.M.	A.M.
Thu.	1	5.10 PM	2.40 AM	4.20	6.10
Fri.	2	5.10	3.50	4.20	6.10
Sat.	3	5.10	6.00	4.20	6.15
Sun.	4	5.00	6.10	4.20	6.15
Mon.	5	5.00	6.10	4.20	6.15
Tue.	6	5.00 NM	6.10	4.20	6.15
Wed.	7	5.00	6.10	4.20	6.15
Thu.	8	5.00	6.10	4.20	6.15
Fri.	9	5.00	6.10	4.20	6.15
Sat.	10	5.00	6.10	4.20	6.20
Sun.	11	8.10	6.10	4.20	6.20
Mon.	12	9.10	6.10	4.20	6.20
Tue.	13	10.10	6.10	4.20	6.20
Wed.	14	11.00 FQ	6.10	4.20	6.20
Thu.	15	12.00	6.10	4.20	6.20
Fri.	16	12.50 AM	6.10	4.20	6.20
Sat.	17	1.50	6.10	4.20	6.20
Sun	18	2.50	6.20	4.20	6.20
Mon.	19	3.50	6.20	4.20	6.20
Tue.	20	4.50	6.20	4.20	6.20
Wed.	21	No L.	No L.	4.20	6.20
Thu.	22	No L. PM	No L.	4.20	6.20
Fri.	23	No L.	No L.	4.20	6.20
Sat.	24	5.10 PM	8.00 PM	4.20	6.25
Sun.	25	5.10	9.10	4.20	6.25
Mon.	26	5.10	10.20	4.20	6.25
Tue.	27	5.10	11.20	4.20	6.25
Wed.	28	5.10	12.30 AM	4.20	6.25
Thu.	29	5.10 LQ	1.40	4.20	6.25
Fri.	30	5.10	2.50	4.20	6.25
Sat.	31	5.10	4.00	4.20	6.25









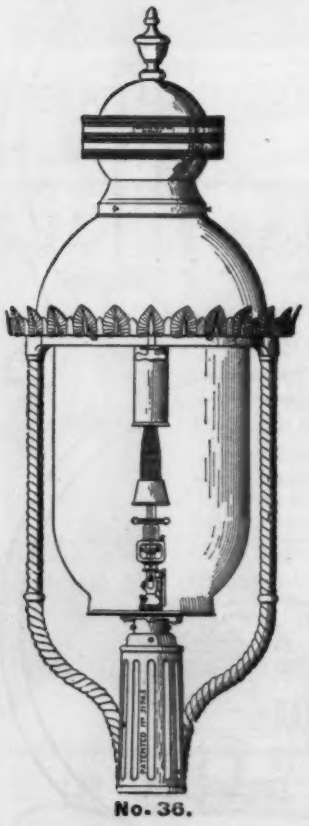
TOTAL HOURS LIGHTING DURING 1904.

By Table No. 1.	Hrs. Min.	By Table No. 2.	Hrs. Min.
January	225.00	January	423.20
February	205.40	February	367.40
March	187.40	March	355.35
April	169.50	April	298.50
May	152.30	May	264.50
June	137.20	June	234.25
July	138.50	July	243.45
August	151.00	August	280.25
September	164.40	September	321.15
October	191.30	October	374.30
November	210.30	November	401.40
December	237.10	December	433.45
Total, yr.	2171.40	Total, yr.	4000.00

NEW YORK, 97 Liberty Street. BOSTON. 814 Beacon Building. PHILADELPHIA, Broad and Arch Streets. ST. LOUIS, 712 Roe Building. CHICAGO, Foot of Orleans Street. SAN FRANCISCO, 712 Polk Street.

WELSBACH STREET LIGHTING COMPANY

.... OF AMERICA ....



No. 36.

Controls and Operates the

Welsbach System of Street Lighting,

Which includes its specially DESIGNED AND PATENTED BURNER for STREET and PARK LIGHTING exclusively.

Uniformly SUCCESSFUL in 150 Cities and Towns.

By means of the Welsbach System of street lighting the superiority of GAS over electricity for street lighting has been fully demonstrated.

POINTS OF MERIT:

It is { Economical, Attractive, Successful, Up-to-date.

IT LIGHTS THE STREET.

Where there are no gas mains we can furnish an equally good light by our SELF-GENERATING NAPHTHA WELSBACH BURNER, and thereby supply a uniform light in all localities.

Correspondence Solicited from Gas Companies and Others interested in Municipal and Outside Lighting.

No. 38.

AN underlying principle in business is to show an increase each year---to grow. The astute dealer not only seeks to retain this year's customers, but to attract new trade next year.

The formula is simple-

THIS SHIELD IS THE WELSBACH TRADE MARK.

IT IS A GUARANTEE AND A PROTECTION.

Sell The Welsbach Brands.

The imitation stuff is bad for the customer---which is bad for you.

The genuine Welsbachs---Burners or Mantles---make satisfied customers---keep customers---MAKE NEW ONES.

And your profit isn't merely dollars and cents.

WELSBACH CO.,

Broad and Arch Sts., PHILADELPHIA.

THE UNITED GAS IMPROVEMENT COMPANY

For the Period Ending July 31st, 1904, has been Awarded Contracts in the Following Places for

Standard Double-Superheater Lowe Water Gas Apparatus.

Augusta, Me.
Bangor, Pa.
Woonsocket, R. I. (2d contract).
Brooklyn, N. Y. (4th contract).
Cincinnati, O. (2d contract).
Scranton, Pa. (3d contract).
New York City (14th contract).
New Haven Conn. (2d contract).
Watertown, N. Y.
Tampa, Fla. (3d contract).
Westchester, N. Y. (3d contract).
Bridgeport, Conn. (2d contract).
St. Paul, Minn. (2d contract).
Harrisburg, Pa.
Pelham, N. Y.
Reading, Pa.
Springfield, Mass. (2d contract).
Lynn, Mass. (5th contract).

TOTAL SETS, 1904, ... 35
TOTAL DAILY CAPACITY, 1904, . . 50,400,000 cubic feet.
TOTAL SETS TO DATE, ... 543
TOTAL DAILY CAPACITY, . . . 413,180,000 cubic feet.

The United Gas Improvement Company,

Broad and Arch Streets, Philadelphia.

Established 1858. Incorporated 1890.
CHAS. E. GREGORY, Prest. DAVID R. DALY, V.-Prest. & Treas.
H. D. ABERNETHY, Sec.

J. H. Gautier & Co.

Greene & Essex Streets,
Jersey City, N. J.

MANUFACTURERS OF

CLAY GAS RETORTS, FIRE CLAY TILES,
FIRE BRICK and FIRE CLAY SPECIALTIES.

Ground Fire Clay, Fire Sand and Ground Fire Brick in Barrels and Bulk.

SOLE MANUFACTURERS OF THE

FLEMMING GENERATOR GAS FURNACE

Brooklyn Fire Brick Works,

OFFICE AND WORKS:
88 VAN DYKE ST., BROOKLYN, N. Y.
MANUFACTURERS OF

CLAY GAS RETORTS & SETTINGS, GENERATOR LININGS. SPECIALTIES.

Established 1854. Incorporated 1869.

LACLEDE
Fire Brick Manufg. Co.,

Manufacturers of { GAS RETORTS . .
FIRE BRICK . . .
RETORT SETTINGS

Water Gas Cupola Linings, Fire Clay, Etc.

Proprietors for the U. S., Coze System of Inclined Benches.

Estimates Furnished on Application for Most Successful Style of Construction.

Also for Free-Firing and Full and Half-Depth Regenerative Benches, for Burning either Coal or Coke in the Furnaces.

Office:
Cor. Manchester and Sulphur Avenues, St. Louis, Mo.

Established 1845. Reorganized 1902.

The Kreischer Brick Mfg. Co.,

Manufacturers of the very best quality of Clay Retorts, Blocks, Tiles, Settings and Firebrick of every description.

Also Miners and Shippers of Fireclay, Fire Sand, Ground Brick in Barrels.

WORKS: KREISCHERVILLE, STATEN ISLAND.
OFFICE: 119 E. 23D STREET, NEW YORK CITY.

Adam Weber Sons.

GENERAL OFFICES: Park Row Bldg., N. Y. City.
DEPOT & WAREHOUSES: 639 E. 15th St., N. Y. City.
WORKS: Weber, N. J.

ERECTION OF

Modern Coal Gas Plants,

With either Horizontal, Inclined or Vertical Retorts.

PATENTS APPLIED FOR.

No. 1. Firing horizontal benches with pulverized fuel, with either 8 or 10 retorts in 1 setting, using one furnace for two benches. Great saving in labor, fuel and life of retorts and settings. No elaboration of complex recuperation.

No. 2. Independent retort settings, taking all weight from retorts.

No. 3. Vertical retorts with vertical charge and discharge. Sixteen retorts in one bench.

MODERN BENCH IRONWORK.

ISAAC C. BAXTER, President. ESTABLISHED 1864. PETER YOUNG, Sec'y and Treas.

Works.
LOCKPORT STATION, PA.

JAMES GARDNER, JR., CO.,

Address all communications to
JAMES GARDNER, JR., CO., Room 202 Lewis B'l'dg.
PITTSBURGH, PA.

Successor to WILLIAM GARDNER & SON.

Fire Clay Goods for Gas Works.

HENRY MAURER & SON,

(ESTABLISHED 1856.)

EXCELSIOR FIRE BRICK & CLAY
RETORT WORKS

WORKS, Perth Amboy, N. J.
OFFICE, 418 to 422 East 23d St., N. Y.

Clay Gas Retorts,
BENCH SETTINGS,
Fire Brick, Tiles, Etc.

GEROULD'S IMPROVED RETORT CEMENT

A Cement of great value for patching retorts, putting on mouthpieces, making up all bench-work joints, lining blast furnaces and cupolas. This cement is mixed ready for use. Economic and thorough in its work. Fully warranted to stick.

Price List, f.o.b. BLOOMINGTON, INDIANA.
In Casks, 400 to 800 pounds, at 5 cents per pound.
In Kegs, 100 to 200 " " 6 " "
In Kegs less than 100 " " 7 " "

C. L. GEROULD, BLOOMINGTON, IND.

For orders East of Buffalo, N. Y., or Pittsburg, Pa., freight will be paid to these points.

Bristol's Recording
PRESSURE GAUGE.

For continuous records of **Street Gas Pressure.** Simple in construction, accurate in operation and low in price.

Fully Guaranteed. Send for Circulars.

THE BRISTOL CO.,
Waterbury, Conn.

Silver Medal, Paris Exposition.

GASHOLDER TANKS AND GAS WORKS MASONRY COMPLETE.

Plans prepared and Estimates furnished at short notice.

J. P. WHITTIER,
238 Java Street, Brooklyn, N. Y.

THEO. J. SMITH, Prest. J. A. TAYLOR, Sec.
A. LAMBLA, Vice-Prest. and Supt.

BALTIMORE
RETORT & FIRE BRICK CO.

MANUFACTORY AT
LOCUST POINT, BALTIMORE, MD.

Clay Retorts, Blocks & Tiles

FIRE BRICK, FIRE CLAY, AND FIRE CEMENT.

Our Improved Half and Full Depth Benches have been Adopted by Many Gas Companies.

WALDO BROS., 102 MILK ST., BOSTON, MASS.

Sole Agents for New England States.

JOHN DELL,
President and General Manager.

MISSOURI FIRE BRICK CO.,

ESTABLISHED 1882.

MANUFACTURERS OF

Gas Retorts, Bench Settings, Fire Brick, Cupola Linings, Etc.

We are the Exclusive Agents *for the* Mitchell Patent Benches, *Constructed with Half or Full Depth Furnaces, to Burn either Coal or Coke, and Arranged for Front or* Rear Clinkering. The Mitchell *is the* Original Coal Firing Bench. *We also Erect Plain Benches with* One *to* Six Retorts.

YOUR CORRESPONDENCE IS RESPECTFULLY SOLICITED.

City Office:
411 Olive Street,
Continental Bank,
ST. LOUIS, MO.

Bronder Patent Stoking Machinery.

Three-Scoop and Three-Rake Charging and Discharging Machines are operating in New York, Newark, N. J., Philadelphia, Worcester, Mass., Mt. Vernon, N. Y., Toronto and Montreal, Canada.

Four-Scoop and Four-Rake Charging and Discharging Machines are operating in Detroit, Mich.

These are the only machines that will draw or charge simultaneously 3 or 4 retorts (vertically) and handle from 42 to 60 retorts in from 25 to 30 minutes, lid opening and closing and filling of furnaces included.

Hot Coke Conveyor, Quencher and Steam Exhauster, operating in Toronto, Canada, working in water-sealed flue, rollers being protected from heat and grit.

COAL CRUSHERS, CONVEYORS AND BINS. TURNTABLES FOR MACHINES.

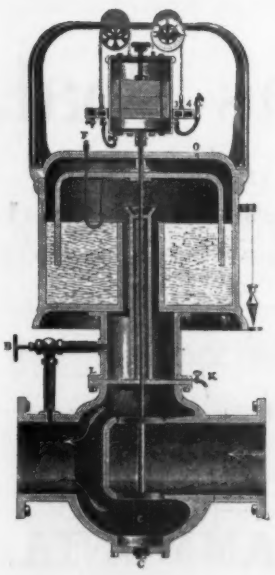
Labor-Saving Machines for Handling Coal and Coke from Coal Cars to Coke Yard or Bins, a Specialty.

G. A. BRONDER,

Contracting Engineer and Builder,

229 BROADWAY, NEW YORK.

CONNELLY IRON SPONGE AND GOVERNOR CO.,



S. F. HAYWARD, Treas. S. P. HAYWARD, Gen. Mgr. F. C. SLADE, Engineer.

DESIGN, CONSTRUCTION AND EXTENSION

— OF —

COAL AND WATER GAS PLANTS,

AUTOMATIC BALANCE, HIGH PRESSURE AND SERVICE GOVERNORS,

ROOTS' IMPROVED EXHAUSTERS.

IRON SPONGE FOR GAS PURIFICATION, JONES JET PHOTOMETERS, PRESSURE REGISTERS, ETC.,

PLANS AND ESTIMATES FURNISHED COMPANIES CONTEMPLATING BUILDING, EXTENDING OR IMPROVING. WIDE EXPERIENCE IN HIGH PRESSURE INSTALLATION.

395 BROADWAY, NEW YORK. 788 SOUTH CANAL ST., CHICAGO, ILLS.

ARTHUR R. CRUSE, President. FRANK FLAVELL, Secretary. AARON E. KEMPER, Treasurer.

Cruse=Kemper Company,

PHILADELPHIA OFFICES: Stephen Girard Building. - - WORKS: Ambler, Pa.

Manufacturers of

Triple, Double and Single=Lift Gasholders,

With or Without Metal Tanks,

Oil and Water Tanks, Purifier Covers, General Plate Metal Work, and Steel Water Towers.

Plans, Specifications and Estimates Promptly Furnished on Request.

MAIN AND SERVICE LAYING.

Gas and water companies about to lay new mains or services will find it useful to communicate with us. Our gangs are experienced and our plant is completely equipped for street main and service laying in all branches. These are our specialties. We are in a position to quote prices which will attract the attention of the economical manager.

Gas Company References. Correspondence Solicited.

Telephone, 302 Flushing. SULLIVAN BROS., Flushing, N. Y.

The Gas Engineer's Laboratory Handbook,

By JOHN HORNBY, F.I.C.

Price, $2.50.

A. M. CALLENDER & CO., 42 Pine St., N. Y. City.

JAMES D. PERKINS, President. F. SEAVERNS, Treasurer.

THE PERKINS COMPANY,

228 and 229 Produce Exchange, New York City.

TIDEWATER SALES AGENTS FOR THE FOLLOWING:

Ocean Mine Youghiogheny Gas Coal,
Old Kentucky Shale and O. K. Boghead.

SHIPMENTS FROM NEW YORK, PHILADELPHIA, BALTIMORE AND NORFOLK.

BERWIND-WHITE COAL MINING COMPANY'S

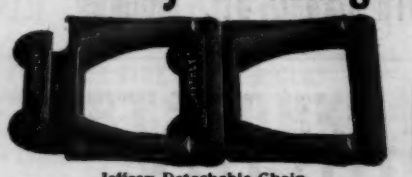
Ocean Westmoreland Gas Coal.

Offices:
Washington Building, New York.
Betz Building, Philadelphia.

STRICTLY High Grade. . . . .
Carefully Prepared.
For Gas Making or
Heavy Steaming. .

A. C. M. AZOY, General Agent, 1 Broadway, New York.

Jeffrey Elevating-Conveying Machinery



Jeffrey Detachable Chain.

FOR HANDLING

COAL, COKE, ETC.

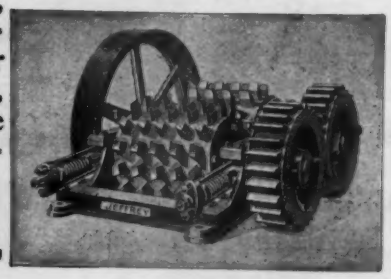
MAY WE SEND YOU COPY OF OUR CATALOGUE NO. 72

Shaking Screens, Dump Cars, Power Transmission Machinery, Chains, Elevator Buckets, Sprocket Wheels, Crushers, Screens, Cable Conveyors, Spiral Conveyors, Etc.

ADDRESS

THE JEFFREY MFG. COMPANY,
COLUMBUS, OHIO, U. S. A.

NEW YORK : : : CHICAGO : : : DENVER.



Coal and Coke Crushers.

The Gas Engineer's Laboratory Handbook,

By JOHN HORNBY, F.I.C. Price, $3.50.

Orders may be sent to

A. M. CALLENDER & CO., 42 Pine St., N. Y.

COAL TAR
— AND —
AMMONIA.

Third and Enlarged Edition.

BY

GEORGE LUNGE, Ph.D.

Price, $15. For Sale by

A. M. CALLENDER & CO.,
42 Pine Street, New York City.

SELF-INSTRUCTION

For Students in Gas Manufacture.

Price, $1.25. For Sale by

A. M. Callender & Co.,
42 Pine Street, New York City.

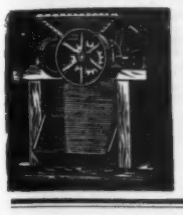
ELECTRIC GAS LIGHTING.

How to install electric gas igniting apparatus, including the jump spark and multiple systems for use in houses, churches, theaters, halls, schools, stores or any large building. Also, the care and selection of suitable batteries, wiring and repairs.

By H. S. NORRIE.

Price, 50 cents. Orders may be sent to

A. M. CALLENDER & CO., 42 PINE ST., N. Y CITY.



KELLER ADJUSTABLE COKE CRUSHER.

Strong, Simple, Durable. Will Crush any Size Desired.

C. M. KELLER,
Sec. & Supt. Gas Lt. & Coke Co.,
Columbus, Ind.
Correspondence Solicited.

POOLE ON FUELS.

THE CALORIFIC POWER OF FUELS.

By HERMAN POOLE, F.C.S.

Second Edition. Price, $3. For Sale by

A. M. CALLENDER & CO., 42 PINE ST., N.Y. CITY.

The Gas Engineer's Laboratory Handbook,

By JOHN HORNBY, F.I.C.

Price, $2.50.

FOR SALE BY

A. M. CALLENDER & CO.,

42 Pine Street, New York City.

BINDER for the JOURNAL.

Price, $1.00.

A. M. CALLENDER & CO., 42 Pine Street, N.Y.

EDMUND H. McCULLOUGH, President. CHAS. F. GODSHALL, Treasurer. H. C. ADAMS, Secretary. HENRY WHARTON, Assistant Secretary.

THE WESTMORELAND COAL CO.

Chartered 1854.

Mines situated on the Pennsylvania and the Baltimore and Ohio Railroads, in Westmoreland County, Pa.

POINTS OF SHIPMENT:

PHILADELPHIA, BALTIMORE, SOUTH AMBOY, N. J.,
WATKINS (SENECA LAKE), N. Y.

Since the commencement of operations by this Company its well-known Coal has been largely used by the Gas Companies of New England and the Middle States, and its character is established as having no superior in gas-giving qualities, and in freedom from sulphur and other impurities.

Principal Office, 224 South 3d St., Phila., Pa.

SUN COMPANY,

PRODUCER, REFINER, SHIPPER AND EXPORTER OF
Petroleum and All Its Products.

Pittsburg, Pa., and Philadelphia, Pa.

THE SUN OIL CO.

Gas Oil, Gas Naphtha,
Refined Oil, Lubricating Oils.

Toledo, O., and Pittsburg, Pa.

BROWNHOIST POWER TRAMRAIL

SYSTEMS FOR HANDLING MATERIAL IN GAS HOUSES.

The Brown Hoisting Machinery Co.,

New York. Cleveland. Pittsburg.

Standard Oil Company,

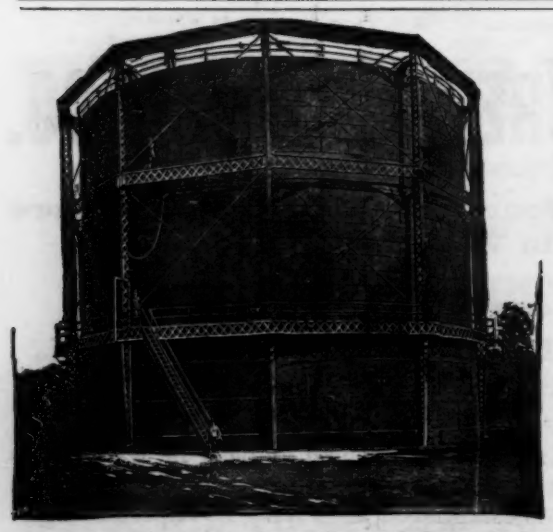
GAS NAPTHA DEPARTMENT.

GAS NAPTHA.

GAS OIL.

Correspondence Solicited.

26 Broadway, New York City.



DAVIS & FARNUM MFG. CO.,

WALTHAM, MASS.

Principal Office & Works, Waltham, Mass. Boston Office, R'm 18, Vulcan Bldg., 8 Oliver St.

Single, Double and Triple-Lift Gasholders of any Capacity. Tubular, Pipe and Sinuous Friction Condensers of all Sizes.

Steel Tanks for Gasholders, Iron Roof Frames and Floors, Purifying Boxes, Center Seal or Valve Connections, Bench Work, Reversible Lime Trays.

Self-Sealing and Pressed Steel Mouthpiece Lids.

Coke Barrows, Coal Wagons, and all Apparatus Requisite for a Complete Gas Works.

Also, Gas and Water Pipe, Flanged Pipe, Sugar House Work, and Special Castings of all Descriptions.

BAXTER & YOUNG,

CONTRACTING AND CONSULTING GAS ENGINEERS.

Examination and Values Ascertained of Artificial and Natural Gas Properties.

COMPLETE GAS WORKS ERECTED.

Artificial and Natural Gas Mains Furnished and Laid

GAS PROPERTIES PURCHASED.

OFFICE: WAYNE COUNTY BANK BUILDING,

Rooms 201 & 202. DETROIT, MICH.

A. E. BOARDMAN, C. E.,

Consulting and Contracting Engineer.

Particular attention given to Gas, Water and Electric Plants. Long and successful experience with the problem and practice of

Filtration for Public Water Supply.

Edison Building, 42 and 44 Broad St.,

NEW YORK CITY.

Geo. Shepard Page's Sons.

GAS MACHINERY.

Correspondence Solicited.

180 Fulton Street, New York City.

DAVID LEAVITT HOUGH,

Consulting Engineer

AND

CONTRACTOR,

PARK ROW BUILDING, N. Y.

Established 1876.

National Paint Works.

PAINTS FOR METAL SURFACES.

We Sell 65 Per Cent. of the Gasholder Paint in the United States.

SALES OFFICE: Great Northern Bldg., Chicago.

FACTORY: Williamsport, Pa.

SALES OFFICE: 92 William Street, New York City.

KERR MURRAY MANUFACTURING COMPANY,

Engineers and Manufacturers

APPARATUS FOR COAL GAS PLANTS,

SINGLE AND DOUBLE-LIFT GASHOLDERS AND STEEL TANKS,

Latest Improved

ROTARY EXHAUSTERS, P. & A. TAR EXTRACTORS, AMMONIA WASHERS,

CONDENSING, SCRUBBING AND PURIFYING APPARATUS.

Street Specials and Valves.

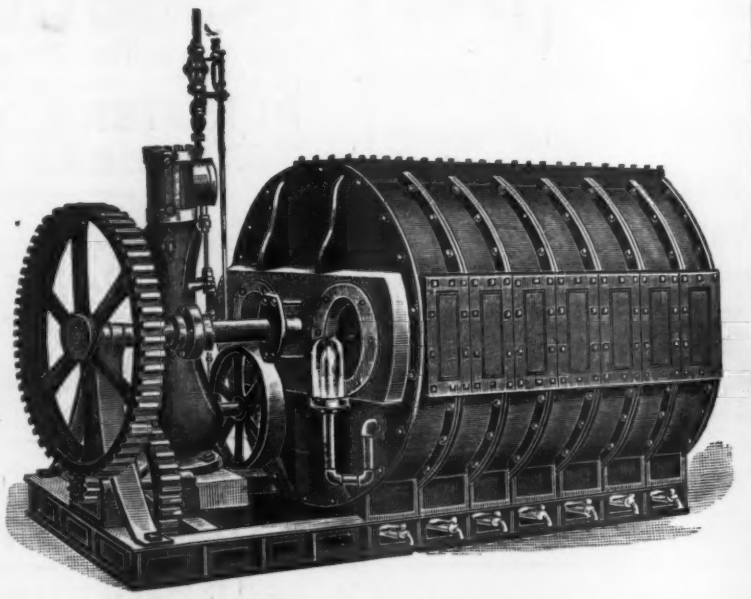
ADDRESS:

KERR MURRAY MANUFACTURING COMPANY, { FORT WAYNE, IND.

BARTLETT, HAYWARD & CO.

BALTIMORE, MD.

Designers and Builders of Gas Works.



Sole Lessees the Wilkinson Water Gas Process.

PATENT STANDARD WASHER-SCRUBBER.

The best apparatus for the extraction of all Ammonia and a large proportion of Carbonic Acid and Sulphureted Hydrogen. The Scrubber has been materially improved and is provided with patented Wooden Segmental Grids, instead of Metallic Discs, thus reducing the weight on shaft and power for operating same.

Coal and Water Gas Installations of the Most Modern and Complete Types.

BENCHES WITH INCLINED RETORTS.

System Stettiner Chamotte Fabrik, Actien Gesellschaft, of Stettin, Germany.

GASHOLDERS OF ALL SIZES.

General Western Agents, THE LLOYD CONSTRUCTION CO., of Detroit, Mich.

QUINTARD IRON WORKS,

N. F. PALMER,

Foot of 12th St. & East River, New York,

MANUFACTURERS OF

GAS APPARATUS.

Complete Works Erected.

FREDERICK W. FLOYD, Engineer.

ALEX. C. HUMPHREYS, M.E., Sc.D., M.Inst.C.E. ARTHUR G. GLASGOW, M.E., M.Inst.C.E.

HUMPHREYS & GLASGOW,

CONSULTING ENGINEERS.

BANK OF COMMERCE BLDG., 31 Nassau Street, New York.

38 VICTORIA STREET London, S. W., England.

ADVICE AS TO EXTENSION AND RECONSTRUCTION OF GAS AND ELECTRICITY PLANT.

COMPLETE EXAMINATIONS MADE.

PROPERTIES PURCHASED.

R. D. WOOD & CO.,

400 CHESTNUT ST., PHILADELPHIA,

MANUFACTURERS OF

Cast Iron Pipe.

HEAVY LOAM CASTINGS,

Dunham Specials,

Hydraulic Work,

LAMP POSTS, VALVES, ETC.,

Gas Power Plants with Producers.

BUILDERS OF

Gasholders.

Single or Multiple Lifts, with or without Metal Tanks.

PURIFIERS, CONDENSERS, SCRUBBERS, BENCH WORK.

Cutler's Patent Freezing Preventer for Holder Cups.

ISBELL-PORTER CO.,

ENGINEERS AND CONTRACTORS FOR THE

Construction and Extension of Gas Works.

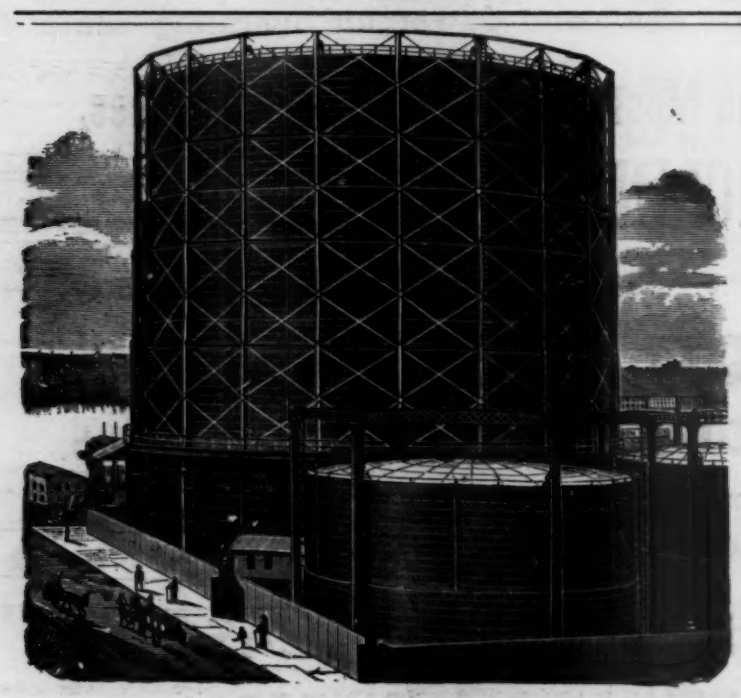
TOTAL ROTARY AMMONIA SCRUBBERS SOLD,

98,806,000 Cu. Feet Daily Capacity.

TOTAL WALKER TYPE TAR EXTRACTORS SOLD,

34,900,000 Cu. Feet Daily Capacity.

OFFICE AND WORKS: Bridge and Ogden Streets, Newark, N. J.



The Continental Iron Works,

THOMAS F. ROWLAND, President.
WARREN B. HILL and CHAS. H. CORBETT, Vice-Presidents.
THOMAS F. ROWLAND, Jr., Secretary & Treasurer.

West and Calyer Sts. (Near 10th & 23d St. Ferries)
NEW YORK, Borough of Brooklyn.

BUILDERS OF

Gas Holders.

Single and Multiple Section Gas Holders a Specialty.

STEEL GAS HOLDER TANKS.

BENCH CASTINGS, RETORT LIDS.

Hydraulic Mains, Condensers, Scrubbers, Purifiers, Valves, Etc.

Self-Sealing Retort Mouthpieces & Lids

For Round, Oval, or "D" Retorts.

THE GAS ENGINEER'S LABORATORY HANDBOOK,

By JOHN HORNBY, F.I.C.

PRICE, - - - - - - - $2.50.

A. M. CALLENDER & CO., No. 42 Pine Street, New York City

THE STACEY MANUFACTURING COMPANY,

MANUFACTURERS AND BUILDERS OF

GASHOLDERS AND STEEL TANKS

AND ALL IRONWORK AND MACHINERY REQUIRED IN A GAS PLANT.

Also Oil Storage Tanks, Steel Roofs, Stand Pipes, Etc.

We also manufacture Lamp Posts, Gas Valves, all size and shape Castings, Etc.

Makers of Apparatus for THE CHOLLAR PROCESS OF PURIFICATION.

Plans, Specifications and Estimates Cheerfully Furnished on Request.

GENERAL OFFICES:

No. 239 Mill Street, CINCINNATI, OHIO. 'Phone, West 690.

EASTERN SALES AGENT:

FRANK D. MOSES, 7 North Stockton Street, TRENTON, N. J.

RITER-CONLEY MFG. CO.,

GASHOLDERS, with or without Steel Tanks.

Purifiers, Condensers, Scrubbers, Oil Tanks, Smoke Stacks.

STEEL ROOFS and BUILDINGS.

PLATE AND STRUCTURAL WORK OF EVERY DESCRIPTION.

GENERAL OFFICE: Pittsburg, Pa. EASTERN OFFICE: 39-41 Cortlandt St., New York City.

J. ALEX. MAYERS,

44 BROAD STREET, NEW YORK CITY,

GAS ENGINEER AND CONTRACTOR

FOR THE ERECTION OF

COMPLETE GAS WORKS

OR ANY PART THEREOF.

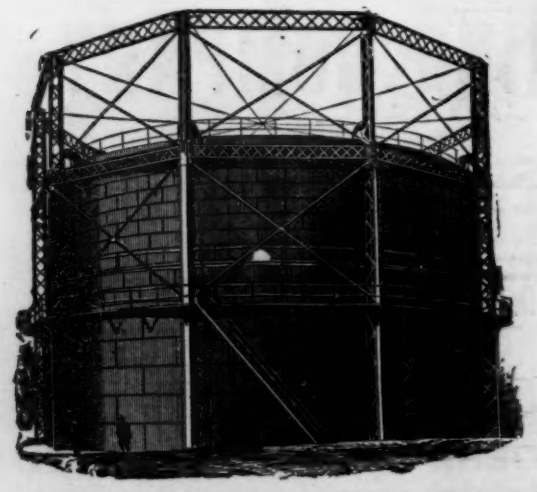
CORRESPONDENCE PROMPTLY ANSWERED.

1904 DIRECTORY 1904

OF AMERICAN GAS COMPANIES.

Price, - - - - - - - - - $5.00.

A. M. CALLENDER & CO., - - No. 42 Pine Street, New York.



1842 ✻ Deily & Fowler, ✻ 1904

LAUREL IRON WORKS.

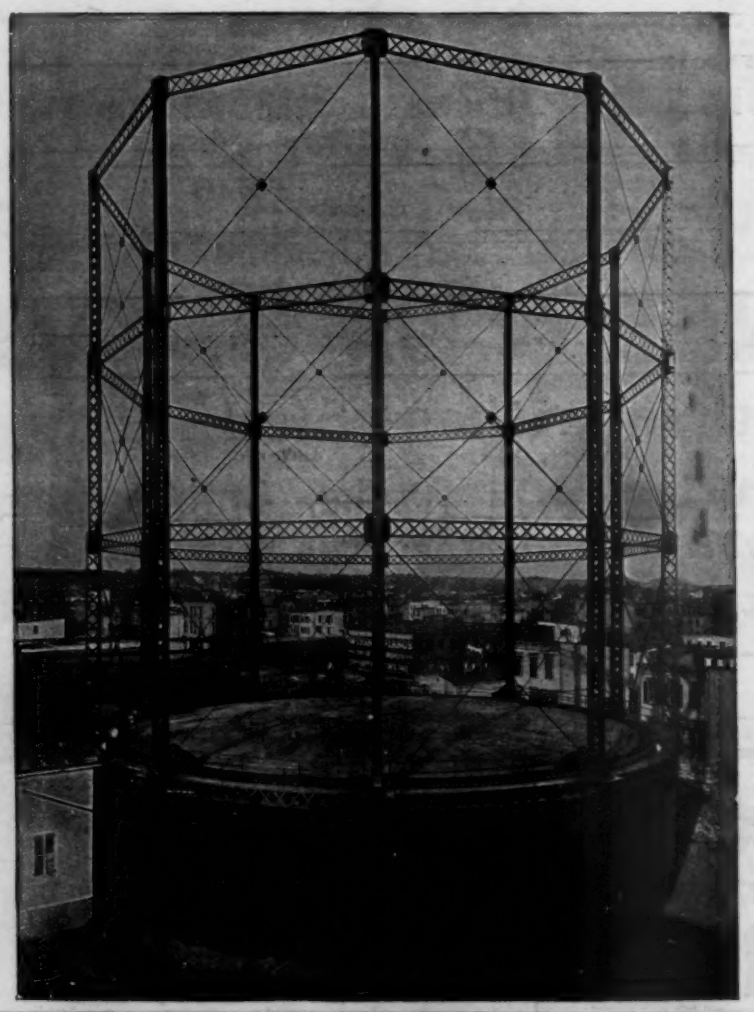
Office, No. 39 Laurel Street, Philadelphia, Pa.

BUILDERS OF

Gasholders

Single or Telescopic. With or Without Iron or Steel Tanks.

OIL TANKS. WATER TANKS, AND GENERAL WROUGHT IRON WORK.



The order for this Triple-Lift Holder and Steel Tank was received by the Logan Iron Works from the Union Gas Light Company, of East New York. The contract was completed and the Holder was in actual use in 90 days from receipt of order. Capacity of Holder, 500,000 cu. ft.

LOGAN IRON WORKS,

Brooklyn, N. Y.,

MANUFACTURERS OF

Single or Multiple-Lift

GASHOLDERS,

Complete, with Steel Tanks.

BENCHES, SCRUBBERS,
CONDENSERS,
PURIFIERS, IRON ROOFS,

AND ALL PARTS OF

GAS WORKS APPARATUS.

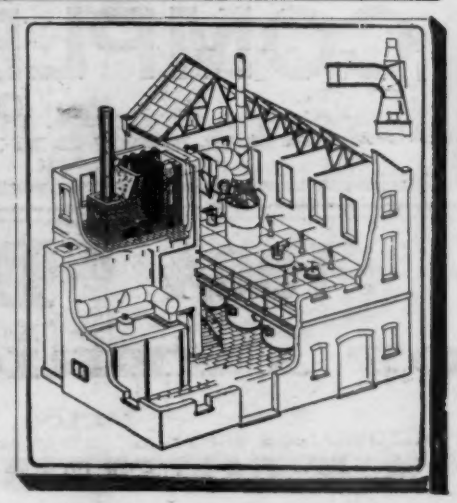
Contractors for Complete Works.

Do you know That there is from **30 per cent.** to **45 per cent.** of heat, from coal used in making water gas, escaping via the stack valve unless your plant is equipped with

GREEN'S Steam Fuel ECONOMIZER

Do you know That in plants where it has already been installed the saving in fuel has been as high as 25 per cent.

Send for booklet if interested.



THE GREEN FUEL ECONOMIZER CO.,

Sole Manufacturers in the United States. MATTEAWAN, N. Y.

Established 1854.

D. McDONALD & CO.,

MANUFACTURERS OF

WET AND DRY METERS, STATION METERS AND METER PROVERS.

ALSO MAKERS OF

THE GLOVER PREPAYMENT METER.

The amount of gas delivered for the coin can be instantly and positively changed without removing the meter or replacing any parts.

The gas registered agrees absolutely with the amount purchased by the coin.

WE HAVE MADE AND SOLD IN THE UNITED STATES

OVER 120,000 OF THESE METERS,

ALL OF WHICH ARE GIVING PERFECT SATISFACTION.

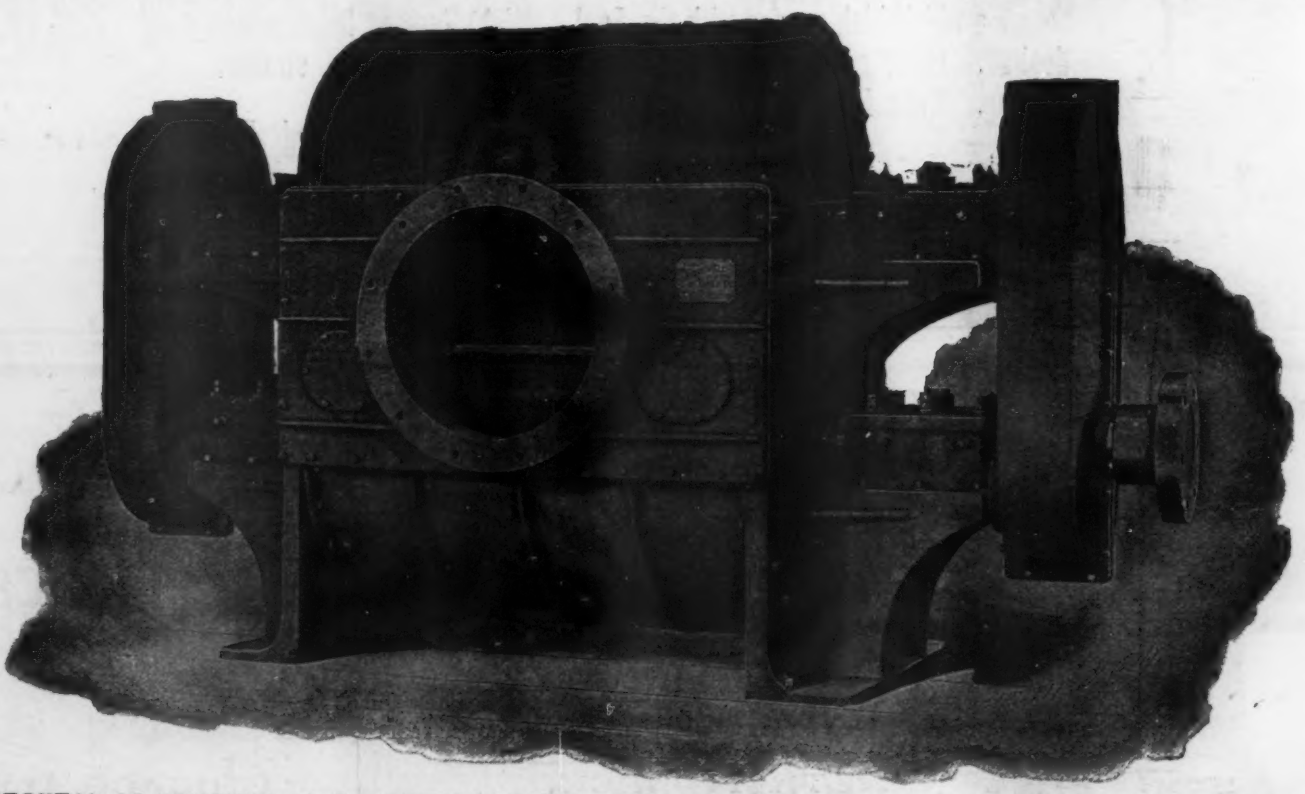
Correspondence Solicited.

561 West Forty-seventh Street, NEW YORK. | 51, 53 & 55 Lancaster Street, ALBANY, N. Y. | Jefferson and Monroe Streets, CHICAGO.

THE CONNERSVILLE BLOWER CO.,

MANUFACTURER OF

ROTARY POSITIVE PRESSURE GAS EXHAUSTERS, BLOWERS AND PUMPS.



HORIZONTAL OR VERTICAL, IN CAPACITY RANGING FROM 9,000 to 1,800,000 CU. FEET DISPLACEMENT PER HOUR.

CONNERSVILLE BLOWER CO., Connersville, Ind. EASTERN SALES OFFICE: 95-97 Liberty St., New York City.

We Have Sold Over 50,000 of Our

PREPAYMENT GAS METERS

IN NEW ENGLAND.

We Have Fitted Up Over 10,000 Idle Regular Meters with Our

PREPAYMENT ATTACHMENT.

Can be Attached to Any Make of Meter.

NATHANIEL TUFTS METER COMPANY, 8 MEDFORD STREET, BOSTON, MASS.

MARYLAND METER CO.,

BALTIMORE, North and Saratoga Streets. CHICAGO, 88 to 92 Jackson Boulevard.

CONSUMERS' AND STATION METERS, PRESSURE GAUGES, ETC.

SPECIAL ATTENTION GIVEN TO ALL REPAIR WORK.

"Have you Seen our Complaint Meter?"

We will furnish meters with the Beal Straight Reading Index, when desired. Either regular or prepayment Repairs changed to straight reading. Write for terms.

KEYSTONE METER CO., Royersford, Pa.

DETROIT STOVE WORKS

"Largest Stove Plant in the World"

MANUFACTURES AND SELLS

DETROIT JEWEL GAS APPLIANCES

FOR COOKING and HEATING,

All about which is told in a fine and strictly "to-the-point" catalog, sent upon request to Gas Companies.

DETROIT, MICH. CHICAGO, ILLS.

AMERICAN METER COMPANY,

NEW YORK, PHILADELPHIA, CHICAGO.
SAN FRANCISCO, ST. LOUIS.

PREPAYMENT METERS.

THEIR CONSTRUCTION IS SUCH THAT THEY MAY BE READILY READJUSTED WHEN THE SCALE OF GAS RATES IS CHANGED.

HELME & McILHENNY,

Established 1848. **1339 to 1349 Cherry Street, Philadelphia, Pa.**

MANUFACTURERS OF

Wet and Dry Gas Meters, Station Meters, Provers, Gauges, Etc.

METERS REPAIRED

PREPAYMENT GAS METERS.

Our Own Patents. Strong. Simple. PROMPT ATTENTION. CORRESPONDENCE SOLICITED.

METRIC METAL COMPANY,

MAKERS OF

GAS METERS for NATURAL and ARTIFICIAL GAS.

Special Attention given to Repairing METERS of all Makes.

FACTORY AT ERIE, PA.

FOR SALE, NASH GAS ENGINE.

Fifty-horse power, 3-cylinder, latest type. Made by the National Meter Company. Engine can be run either on gas or gasoline. In use less than a year and as good as new. A desirable engine where natural gas is abundant and close regulation is not expected. For further particulars address

BUHL STAMPING CO., Detroit, Mich.

The Western Gas Construction Co.

received **HIGHEST AWARDS** given

At any International Exhibition, and by a jury of **Gas Managers and Engineers** of National reputation, for Superior and Complete Exhibits, embracing:

Iron Mountings and Equipment for Retort Benches. Methods and Apparatus for Cooling and Condensing Coal Gas and Recovery of By-Products. Ammonia Concentrating Apparatus and Operating Appliances. Apparatus for the Manufacture of Water Gas, including Tar Extractors and Washers. Purifying System and Apparatus. Special Designs Pressure Gauge Boards and Gauges.	Highest possible Award, GRAND PRIZE.
Standard and Special Designs of Valves and Specials for Gas Works. Floor Operating Stands, Automatic By-Pass Valves, Automatic Regulating Valves or Governors, Pipe Specials for Gas Works.	Highest possible Award, GRAND PRIZE.

These awards have been indorsed by every "Gas Man" who has critically examined the superior **General and Detail Design, Workmanship and Operating Efficiency** which earned them.

If you desire such Apparatus you will now **write us** and find our prices, everything considered, no higher than--the other kind.

WE DID IT!

The Western Gas Construction Company,

General Offices and Works, Fort Wayne, Ind.

NEW YORK OFFICE, 2,015 Park Row Building. SAN FRANCISCO OFFICE, 137 Montgomery St.